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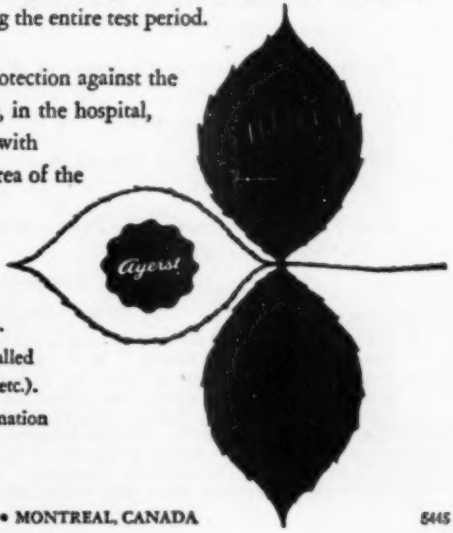

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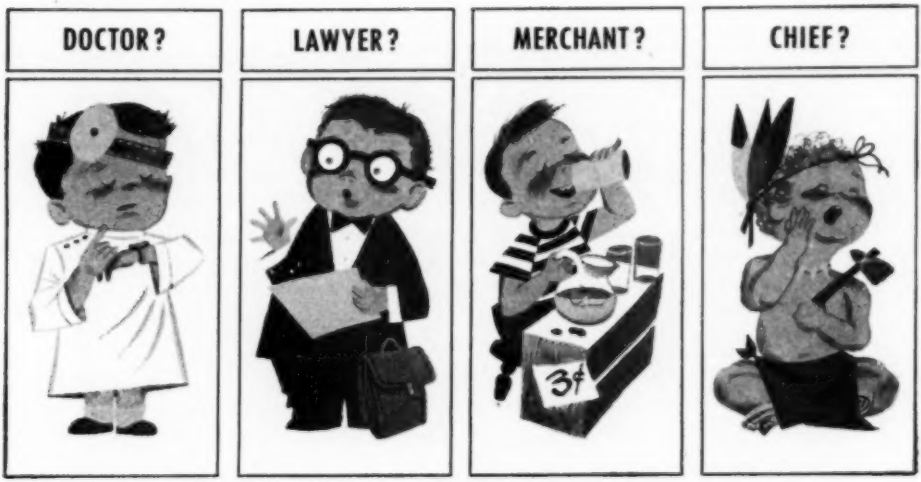

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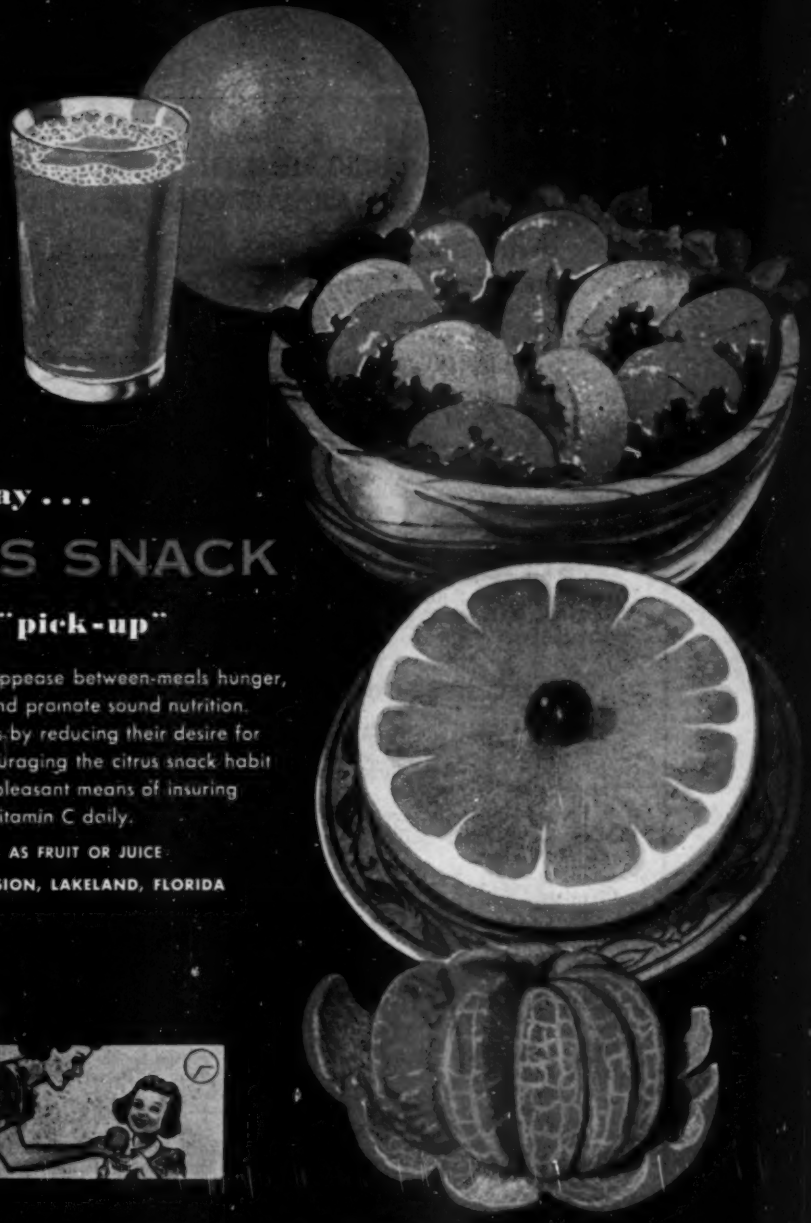

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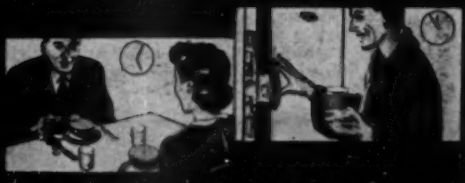

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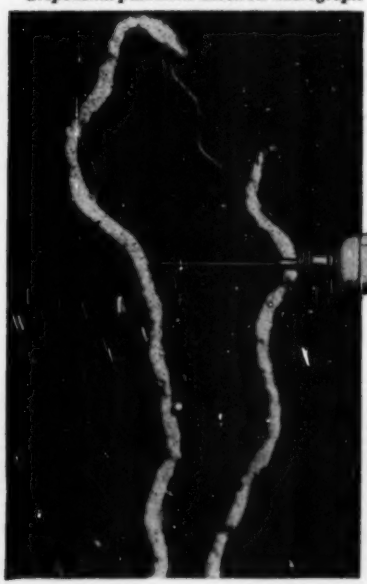

1. Smith, C. A., and others: Am. J. Syph., Gonor. & Ven. Dis. *38*:136 (March) 1954
2. Moore, J. E.: Ann. Int. Med. *39*:644 (Sept.) 1953

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1. Flippin, H. F.: Philadelphia Med. 49:733 (Jan. 30) 1954.
2. Glatt, M., and Ross, S.: Antibiotics & Chemotherapy 4:395 (Apr.) 1954.

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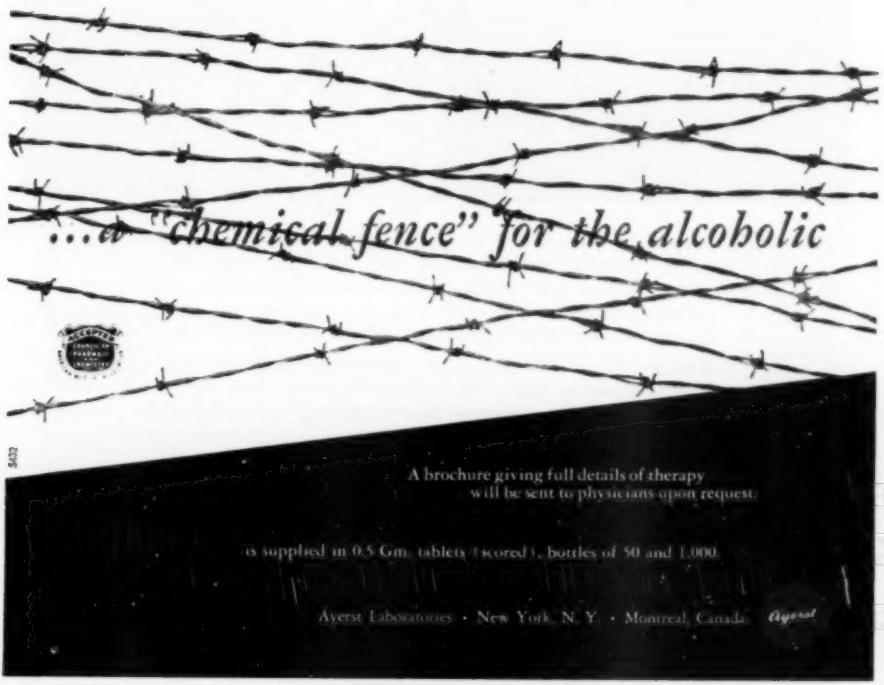
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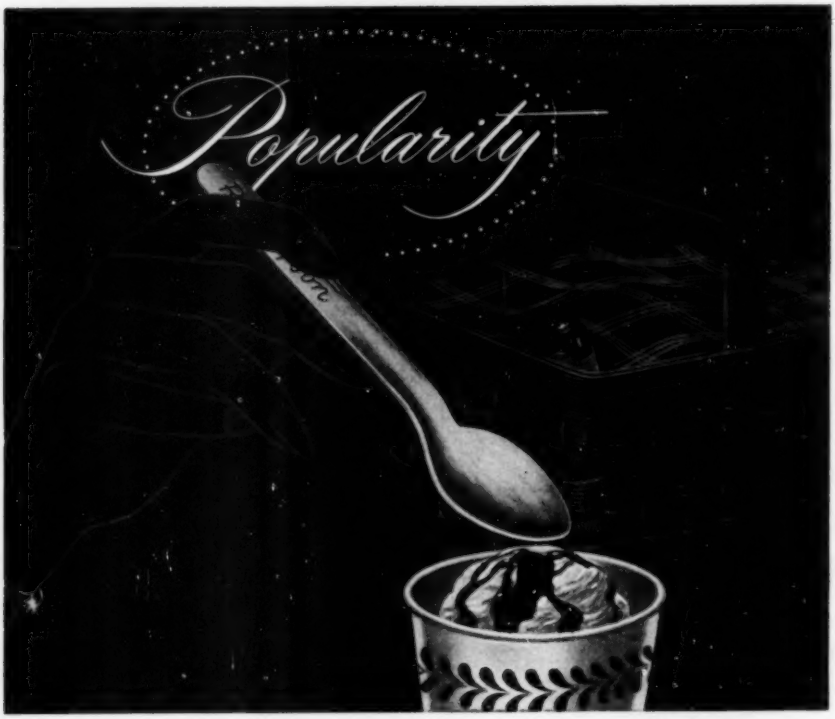

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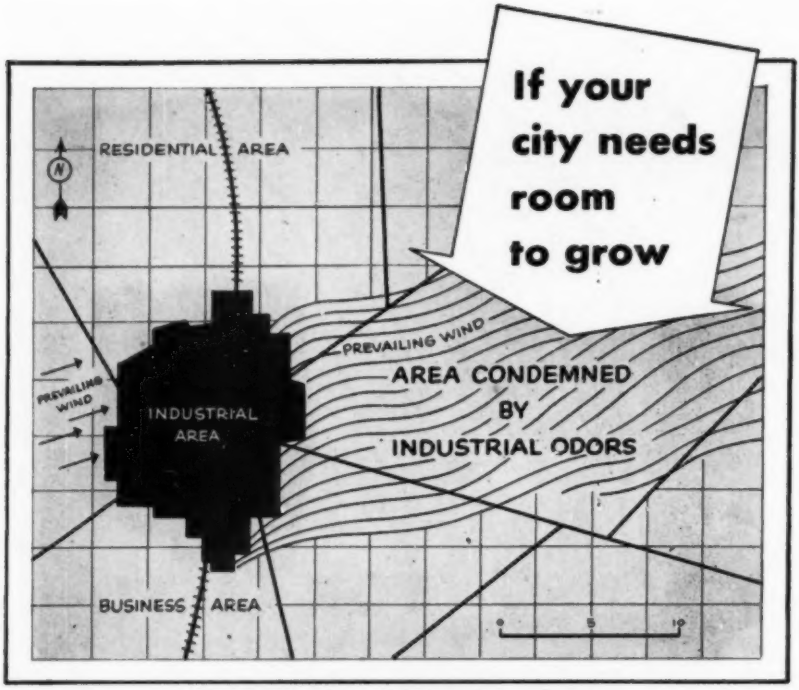

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(1) Hopkins, J. G.: AMA Arch. Dermat. & Syph., 67:479-483 (1953).
(2) Sullivan, M., and Bereston, E. S.: J. Invest. Dermat., 19:175-178 (1952).

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INSIDE SCIENCE

The Vital Story of VITAMIN C

by Science Writer

What does vitamin C do for human beings?

Medical research shows that it is essential in maintaining healthy bony tissue and for the formation of collagen which is the main supportive protein of skin, tendon, bone, cartilage and connective tissue. It is needed for vascular function and tissue respiration and in promoting the healing of wounds. In lactating women it has great importance in providing the infant with a sufficient amount of ascorbic acid to prevent scurvy, a disease to which very young babies are susceptible.

Much evidence is available in medical reports to show that a lack of this vital nutritive element can result in impaired health. And in those cases of frank scurvy which still occur, ascorbic acid is the specific medication.

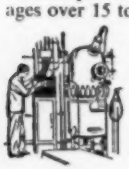
History. The history of vitamin C is fascinating. Scurvy was once the most prevalent disease in Europe. In the 18th Century the antiscorbutic value of fresh vegetables and citrus fruits was recognized.

Isolation. It was not until 1918-25 that almost pure ascorbic acid was concentrated from the lemon by Zilva and its important properties and molecular composition established. In 1927 he concluded that this so-called "reducing factor" and the antiscorbutic principle were closely related. In 1928, Szent-Györgyi, who started investigations in 1921, isolated a strong reducing compound from adrenal glands, oranges, cabbage, terming it "hexuronic acid."

Chemistry. The "reducing factor," "hexuronic acid," and vitamin C were all identified as the same in 1932 by various groups of workers. This was one year after C. G. King established the chemical identification of vitamin C.

Synthesis. In 1933 Reichstein and his colleagues in Switzerland successfully synthesized ascorbic acid. Almost simultaneously in England Haworth and associates accomplished the same. The Reichstein synthesis formed the basis for large scale commercial production by the world-famous firm of Hoffmann-La Roche.

Production. Following these discoveries came the establishment of manufacturing operations so that today daily production by the tons is the rule. The figures are really staggering. The amount produced weekly in the U. S. A. averages over 15 tons, equivalent to that contained in over 200 million oranges. It is remarkable that ascorbic acid can be produced synthetically and sold for only about $21. per kilogram. One kilo is sufficient to supply 92 people for one year with the minimum daily requirements set by the U. S. Food and Drug Administration.



Vitamin C made by the Roche process is identical chemically and in biological activity with Nature's own product. Because vitamins can be manufactured at a much lower cost than if they were extracted from natural sources they are widely used in dietary supplements.

Ascorbic acid is present in many foods. Nature supplies some with lavish amounts and stints on others. In fact, wide variations* have been found in the vitamin C content in varieties of the same fruit.

Deficiencies. Many surveys have shown widespread vitamin C deficiencies in the population. Physicians may call these subclinical, but they are deficiencies nevertheless.

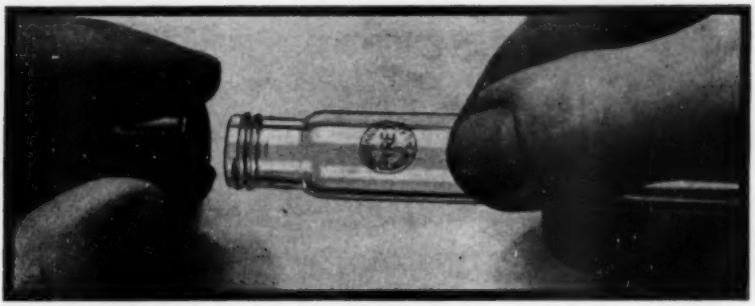
Because of these situations—natural variation and widespread deficiencies—diet experts believe that it is desirable and in the public interest to standardize the vitamin C content of processed fruit and vegetable juices by the addition of enough pure crystalline ascorbic acid to make them consistently dependable sources of this necessary food element. Some of these juices are: tomato, grape, orange, grapefruit, pineapple.

Requirements. The U. S. Food & Drug Administration has set 30 milligrams as the adult minimum daily requirement of ascorbic acid. This daily intake is just about sufficient to prevent recognizable signs of vitamin C deficiencies although a subclinical or an unrecognized deficiency may exist. In view of this, the National Research Council has established 75 milligrams as the recommended daily male adult allowance and 70 mg. daily for female adults, which levels are supported by many controlled nutrition studies. However, the N. R. C. recommends 90 mg. daily for boys between 13 and 15, 100 mg. daily for boys between 16 and 20, and 150 mg. daily for lactating women.

This article is published in the interests of pharmaceutical manufacturers and food processors who make their good products better with essential, health-giving vitamin C. Reprints are freely available. Vitamin Division, Hoffmann-La Roche Inc., Nutley 10, New Jersey. In Canada: Hoffmann-La Roche Ltd., 286 St. Paul Street, West; Montreal, Quebec.

*The table shows minimum and maximum levels of ascorbic acid in commercially canned juices. All figures are in milligrams per 100 grams of juice. Data from U. S. Department of Agriculture.

	Min.	*Max.*
Apple juice	0.2	3.6
Grape juice	0.0	4.7
Grapefruit juice	10.0	49.0
Orange juice	9.7	70.0
Pineapple juice	5.4	18.0
Tomato juice	2.5	32.0



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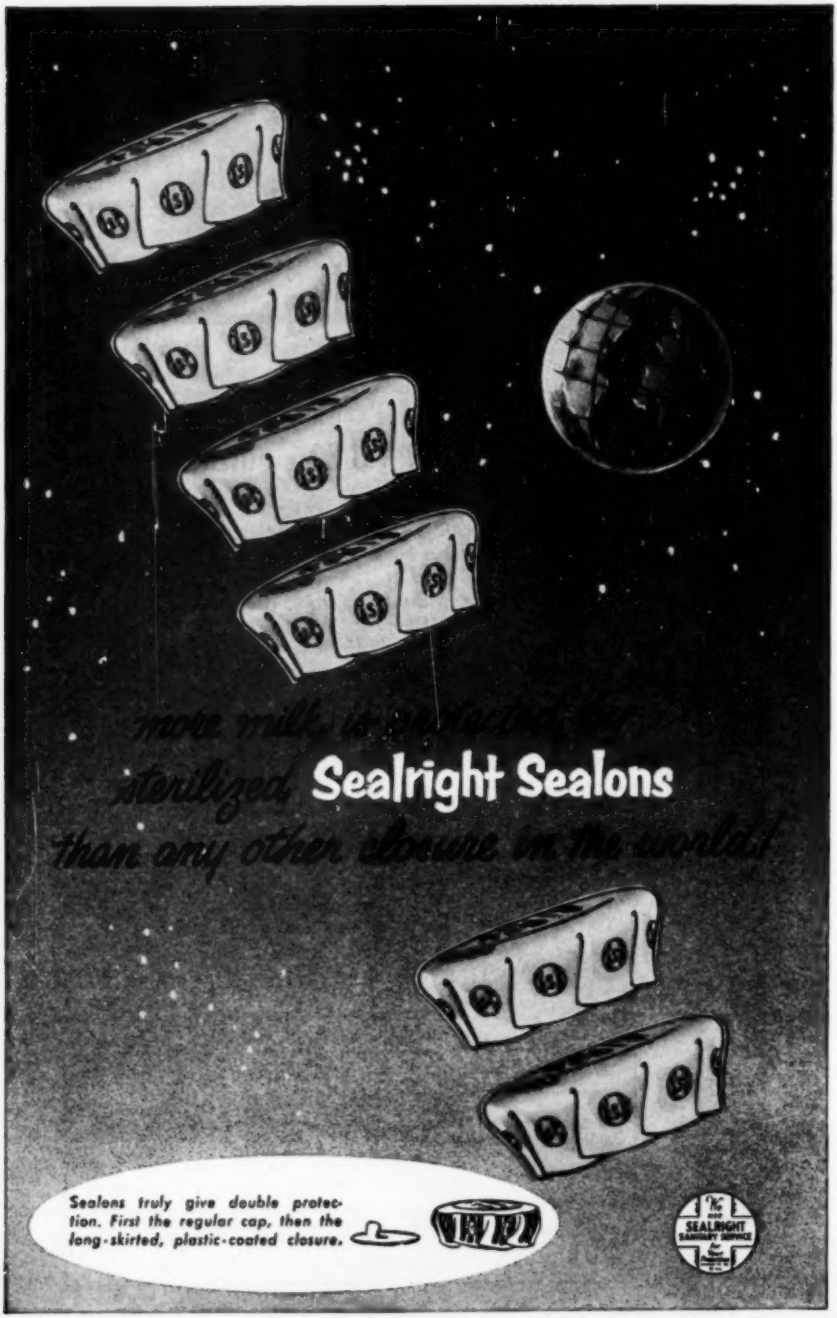
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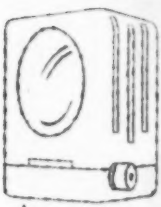

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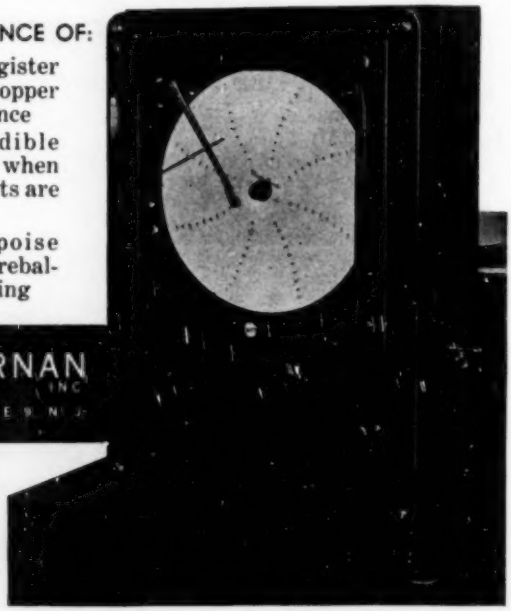

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American Journal of

PUBLIC HEALTH

Official Monthly Publication of the American Public Health Association, Inc.

Volume 44 July, 1954 Number 7

Cardiovascular Health Center

I. Project Design for Public Health Research

HERMAN E. HILLEBOE, M.D., M.P.H., F.A.P.H.A.; GEORGE JAMES, M.D., M.P.H., F.A.P.H.A.; and JOSEPH T. DOYLE, M.D.

A pilot study is set up to work out a practical means for detecting preclinical heart disease in the community and to reveal what additional research may be needed for a mass attack upon coronary disease and hypertension. It is this sort of pioneering that tomorrow's public health administration will be based upon.

✢ The ability of official public health agencies to maintain their hard-won leadership is being challenged in many states by the change in the program content of public health from the acute communicable toward the chronic disabling diseases. Health departments cannot long continue to give highest priority to traditional programs in sanitation and communicable disease if these problems are largely under control. However, it is premature to launch broad community service programs for the "control" of diabetes, heart disease, and obesity based upon the few reported laboratory studies and pilot demonstrations. The chronic disease problem involves much more than the familiar problem of a single etiology, vaccine, or technical procedure which can be solved by a short series of discrete field tests. Health agencies cannot spend millions of dollars for widespread community services founded solely on early experimental findings, however promising.[1]

Before new resources can be added to the standard practices now employed in public health, possibilities for error must be narrowed by well planned critical studies. It is here that official public health agencies can contribute effectively to the process of change by initiating and carrying out those field research projects on chronic disease problems for which their experience, personnel, and special abilities are uniquely suited. Some of the recent discoveries of preventive medicine could be translated immediately into new cardiac services for citizens, but the discovery of promising "next steps" in the development and application of such knowledge is even more important.

Dr. Hilleboe is commissioner of health, and Dr. James is assistant commissioner, Program Development and Evaluation, New York State Department of Health, Albany. Dr. Doyle is director of the Cardiovascular Health Center. All the authors are also associated with the Albany Medical College, Albany, N. Y.

Health agencies can no longer regard research—especially such developmental and applied research—as outside their official responsibility.

To undertake projects of this scope, which are new to most public health workers, a Program Development and Evaluation unit was created in the Executive Division of the New York State Department of Health. The unit includes an epidemiologist experienced in local and state health activity, an administrative assistant trained in administrative analysis and personnel services, a public health statistician, and a research scientist versed in social science investigations in the health field. This new unit is charged, under the immediate direction of the commissioner of health, with organizing the development and evaluation of public health programs and research conducted in the State Health Department. It helps plan and develop new programs and assists in their integration with existing divisions and outside agencies. It studies serious health problems in the state which, at present, are not amenable to attack with available public health resources. It initiates and encourages studies to determine the yardsticks needed to measure progress in public health.

This is a paper on the methodology employed in the first research project developed by the new study unit in order to: (1) suggest a practical method of detecting preclinical and early clinical cardiac illness, and (2) point clearly to the additional research studies needed for a practical mass attack on coronary artery disease and hypertension.

Adult Heart Disease—Analysis of the Problem

Of every 100 deaths in New York State during 1952, 42 were due to heart disease; of these, 30 were caused by coronary heart disease, five by hypertension (Table 1), and the remainder by other diseases of the cardiovascular system (Table 2).[2] These diseases are not solely problems of the aged; in this state in 1952, one-fourth of all male

Table 1—Resident Death Rates per 100,000 Population by Sex and Age for Certain Specific Causes[2]—New York State (Exclusive of New York City)—1952

Age	Causes							
	Cardiovascular Renal Diseases		Diseases of the Heart		Arteriosclerotic Heart Disease Including Coronary Disease		Hypertension with Heart Disease	
	Male	Female	Male	Female	Male	Female	Male	Female
Less 5	5.9	3.6	1.5	0.8				
5– 9	3.0	3.5	1.2	1.0				
10–14	2.4	4.2	1.2	0.4	0.3	..	..	0.1
15–19	9.2	5.1	3.2	2.8				
20–24	17.7	8.3	9.1	5.4				
25–34	31.4	22.1	22.1	12.3	11.6	2.1	2.1	1.4
35–44	144.8	68.1	118.6	43.1	84.8	12.7	6.1	7.3
45–54	492.8	238.2	416.7	163.0	340.9	80.2	26.5	38.1
55–64	1,412.7	707.3	1,170.5	504.9	947.5	332.7	104.5	87.8
65–74	3,166.1	2,232.9	2,456.2	1,563.8	1,902.8	1,070.7	213.0	245.1
75+	8,811.7	8,065.8	6,243.1	5,403.0	4,354.9	3,493.5	520.4	666.1
Total	665.4	554.0	511.1	377.9	386.5	242.3	42.2	55.0

Table 2—Deaths in 100 (Proportional Mortality) Due to Certain Specific Causes by Sex, All Ages and Certain Age Groups, New York State (Exclusive of New York City)—1952

Cause	All Ages			Age 35–44			Age 45–54			Age 55–64		
	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female
Cardiovascular renal diseases	58	57	60	37	41	30	48	51	43	56	58	52
Vascular lesions affecting C.N.S.	11	9	13	5	4	6	6	5	9	9	7	12
Rheumatic fever	0.1	0.1	0.1	0.4	0.3	0.5	0.1	0.0	0.3	0.0	0.0	0.0
Diseases of the heart	42	44	41	28	34	19	38	43	29	44	48	37
Chronic rheumatic heart diseases	1	1	2	6	5	8	4	3	6	2	1	2
Arteriosclerotic heart disease including coronary disease	30	33	26	17	24	6	28	36	14	34	39	24
Nonrheumatic chronic endocarditis and other myocardial degeneration	6	5	6	1	1	1	2	2	2	3	2	3
Hypertension with heart disease	5	4	6	2	2	3	4	3	7	5	4	6
Hypertension without mention of heart disease	0.8	0.7	0.9	1	0.8	1	0.9	0.8	1.0	0.6	0.4	0.8
General arteriosclerosis	2	2	3	0.1	0.0	0.2	0.1	0.0	0.2	0.5	0.5	0.5
Other diseases of circulatory system	0.6	0.7	0.4	0.7	0.8	0.6	0.8	0.8	0.8	0.8	0.9	0.6
Chronic and unspecified nephritis	1	1	1	2	2	2	2	1	2	1	1	1
Tuberculosis	1	1	0.7	4	3	4	2	3	1	1	2	0.6
Malignant neoplasms	16	15	17	21	15	30	23	17	33	23	20	29
Accidents	5	6	4	12	16	7	6	8	3	3	4	2

deaths between ages 35 and 44 were caused by coronary heart disease. The best available data[3] indicate that if males free from heart disease at age 40 are followed for 20 years, 14 per cent will develop clinical coronary heart disease, and 4 per cent will die of this malady in that period.

In preparing to attack a massive public health problem, the total "need" must be divided into its component parts, so that we may concentrate our efforts to obtain specific results.[4, 5] For heart disease, the major components are coronary heart disease and hypertension. Further analysis points up the different mechanisms involved in various stages of coronary disease. Coronary insufficiency can follow any spasm, thickening, stiffening, or partial blockage which—singly or in combination—narrows the lumen of the coronary arteries. These mechanical changes affect the amount of oxygen carried to the heart muscle. Similar results will also follow certain systemic diseases, such as severe anemia, malnutrition, and diabetes. Coronary occlusion occurs when an artery becomes completely blocked and the heart muscle, deprived of oxygen, is usually permanently damaged. The seriousness of the infarct which follows such an occlusion is determined by the location and extent of the involvement.

Infarction not only follows a sudden occlusion of a coronary artery, but may also occur after a slow progressive narrowing of one or more branches, resulting in ischemia and necrosis. Blumgart[6] and Enos, et al.,[7] have shown from autopsy material on persons who died from noncardiac disease that marked narrowing, and even actual closure, may occur in several main branches of coronary arteries without a history of symptoms or signs of angina or myocardial failure. Blumgart further demonstrated that the majority of hearts of persons over 40 years of age showed evidence of coronary artery atherosclerosis. This evidence indicates that pathology alone does not explain coronary heart disease and that the classification and diagnosis of this disease is unusually complex and must be approached with great caution.

The patient's history is of prime importance in the detection and diagnosis of coronary disease. Frequently, it offers the only available evidence of disease in the face of negative physical and laboratory findings. When coronary insufficiency gives rise to the warning signs of angina, exertional dyspnea, or fatigue, an accurate diagnosis can lead to medical advice that results in a changed manner of living. Protection of the heart muscle against unnecessary strain and foreseeable stress may provide many additional years of life. Enlargement of the heart, as shown on simple screening tests such as fluoroscopy,[8] or x-ray films of various types,[9] may also suggest coronary insufficiency. Normal standards for heart size on x-ray exhibit considerable variation, but the electrocardiogram can give an electrical indication which has been accepted as a more reliable measure of ventricular hypertrophy.[10] Cardiac enlargement not due to hypertension or valvular defect always arouses suspicion of coronary disease.

The physical examination and special tests, such as the electrocardiogram and analysis of blood lipoproteins, may also provide evidence of coronary insufficiency, cardiac enlargement, hypertension, and peripheral vascular disease, either alone or in formidable combination. On the other hand, the only positive finding may be a vague history of pain referable to the chest. In such cases it is desirable to observe how the heart muscle reacts to increased work as measured by the electrocardiogram taken both before and after stress. Master's exercise test[11] is commonly used to detect impaired coronary efficiency.

Criteria for positive results have not yet been uniformly standardized and some cardiologists report that false-positive findings occur fairly frequently [12]; yet, the test is safe, inexpensive, and easy to perform. Similar exercise tests employing the treadmill appear effective.[13] Electrocardiograms taken before and soon after a meal of 900–1,500 calories have also been used to gain evidence of coronary insufficiency.[14]

Levy's anoxemia test [15] employs the principle of induced oxygen want to measure the functional efficiency of coronary circulation by means of the electrocardiogram before and after deprivation of oxygen in the respired air. Its disadvantages, according to some investigators, are its expense, the difficulty of controlling blood oxygen levels, and certain undesirable reactions, including anxiety in some of the persons tested. Its proponents point to the low number of false-positive results, while admitting that it fails to reveal many cases of coronary disease. Levy recommends that "for routine clinical purposes, the anoxemia test should be restricted to cases in which the diagnosis of coronary insufficiency is in doubt. Only a positive result is significant." The safety, reliability, or validity of other tests for coronary insufficiency, such as the ballistocardiogram, the flicker fusion, and the use of ergonovine are at present still controversial.

None of the tests described measures the degree of coronary insufficiency, identifies the nature of the primary cause, or suggests the probable cardiac future of a particular patient. When positive, however, these stress tests indicate a disturbance of myocardial function at the time of the test which should lead to the prompt institution of medical supervision and advice.

The mechanisms in hypertension include complicated combinations of neural, humeral, mechanical, and renal factors. Perera and Atchley [16] define hypertensive vascular disease as "a disorder in which the arterioles offer an abnormal but variable resistance to the flow of blood." A complex system of chemicals and mechanisms maintains arterial pressure. The intrinsic factors are output per minute, blood volume and viscosity, elasticity of the larger arteries, and the resistance of the peripheral arterioles. Extrinsic factors include respiration, central and peripheral neurogenic reflexes, chemical products, and noncardiovascular disease such as hyperthyroidism. Drugs and surgical therapies also affect blood pressure levels in varying degrees. Changes in intrinsic and extrinsic factors may be temporary or permanent in their effects.

The critical question remains: What is normal, and what is abnormal blood pressure? A scientific answer is not available, despite 50 years of experience in which millions of blood pressures have been taken and studied. In everyday practice, certain arbitrary standards are recommended by various medical experts.[17] Blood pressure is lower in children than in adults, tends to be higher in the obese, is lower among certain Indian tribes,[18] and fluctuates with the individual's health and the circumstances under which the reading is made. Opinions differ on whether variability of pressure in an individual is more significant than a single high reading and on whether those with higher levels within the normal range may run greater risk of hypertension.[19, 20] Under well defined conditions abnormal elevation of the diastolic pressure must be given the most weight in arriving at the diagnosis of hypertensive vascular disease. One should not merely label a person with elevated diastolic blood pressure as a case of hypertension until psychosomatic and environmental factors have been critically appraised and the cardiac, renal, and vascular complications carefully assessed.

Many persons with hypertension have no symptoms from the elevated blood pressure; if they are not alarmed by treatment and can make reasonable adjustments in their mode of life they seem to do well. A small proportion, however, do undergo rapid deterioration accompanied by renal failure, and progress to a fatal outcome despite all therapeutic efforts. For those who develop cardiovascular or renal complications, the physician can provide special therapy and medical supervision. No specific test is now available to differentiate these two general varieties of hypertension. Until more refined tests are discovered, measurement of blood pressure, as a simple screening test, should be applied at intervals on a mass basis to bring hypertensive suspects under medical supervision.

Method of Attack

For the past few years, the New York State Health Department has been dealing with the adult heart disease problem by postgraduate education of physicians, general community health education, consultative cardiology services in various clinics, nutrition programs, social work demonstrations, and public health nursing services. These activities, undertaken with limited funds on a demonstration basis, constituted only a modest start toward the prevention and control of heart disease. It was time for a direct approach which, although developed on a small scale, might lead directly to effective technics with which to help solve the riddle of heart disease.[21]

In June, 1952, the Program Development and Evaluation unit began a study to determine how the State Health Department could contribute to the science of preventive medicine in heart disease, hoping to parallel the extensive research being done in the clinical and experimental fields of the problem. Consideration began with the logical first step: What is a case? Coronary heart disease is primarily a clinical diagnosis, recognizable by symptoms of angina; hypertension encompasses many diseases, all characterized by a sign—increased diastolic blood pressure. Between symptom and sign, and the basic physiological mechanisms which might be involved, is a world of mystery. One way to explore this world is to apply periodically, to a series of "normal susceptibles," the best available technics for detecting these diseases.[22] With the passage of time, as symptoms or signs required to establish the diagnoses occur, the carefully compiled record of test results can then be analyzed for findings suggestive of a preclinical diagnosis.

Attempting an epidemiological study in the face of an inability to recognize cases before the onset of irreversible symptom-producing pathology is like attempting to solve the epidemiology of the streptococcus by a study limited to deaths from rheumatic fever. However, this is the fundamental problem in heart disease control, as it is in so many chronic diseases. An attack upon the problem of preclinical diagnosis will lead directly to further studies of preventive, case-finding, and therapeutic measures. Such an approach can bring additional dividends: the reliability of existing diagnostic tests can be checked; promising new tests can be evaluated, their practicability, cost and public acceptability assessed, and knowledge of their use disseminated among the medical profession; and satellite research projects developed around the "core" program can be promoted.

Keys[23] set down a challenge to future public health effort to heed the measurable differences found among normal, healthy individuals. Analysis must include an investigation of how these differences are associated with the later development of disease, variations

in time and place of occurrence, and with certain other environmental factors. The next step would then become the experimental attempt to modify these differences by manipulating the associated environmental factors in the hope of interfering with the development of the particular disease. Such an approach requires that the epidemiological method be applied in its broadest sense—and all present indications are that chronic diseases, with their multiple etiologies, must be considered from the standpoint of each of many environmental and inherited factors. This is, indeed, the field in which public health agencies are uniquely prepared to assume leadership.

As the program based on this approach evolved, it was found that all requirements could be met within the Albany area. A fair-sized, stable population of male adults, who could be examined periodically, was available among the State Civil Service Employees in Albany. A cooperative agreement with Albany Medical College provided a medical center which has clinical facilities to guide all clinical procedures and offer the cardiology staff active contact with other medical specialties. Endorsement of the county and state medical societies was granted this research project in which no treatment would be provided to the participants.

Program

Early Planning—A full six months was set aside for a review of existing knowledge and completion of the preliminary administrative plans. There were three essential parts to this review: (1) a study of the literature, (2) advice from consultants, and (3) visits to similar projects already in operation.

Collecting, indexing, and publishing 16,000 titles on hypertension, and preparing 1,500 abstracts consumed three years of the time of Clark's social science research team.[24] We desired to obtain all possible information about previous investigations into coronary disease, but did not wish to postpone actual research for so long a period. By dividing the task among the team members the major pertinent papers on coronary heart disease were identified and studied in six months, while other tasks necessary to the rapid development of the project were being performed. Clark's data [24] were reviewed for background material on hypertension.

Consultants, selected with care, are essential to help us review and criticize new public health programs. Not only can they relate important contributions to the subject and appraise the scientific merit of previous studies, but they can supply significant unreported experiences. For this project a formal advisory committee, composed of five noted internists and cardiologists, some with special experience in preventive medicine, was created. In addition, consultations were held with numerous other experts in epidemiology, laboratory, and clinical medicine, the basic medical sciences, and the social sciences. The advisory committee and the consultants help keep the project on a sound scientific basis and contribute practical suggestions for action.

Members of our team visited the cardiac disease detection programs in Framingham,[25] Minneapolis,[26] and Baltimore,[27, 28] and certain related experimental studies in New York City, Saranac Lake, Washington, D. C., Philadelphia, and Boston. These contacts create a mutual interest which should further the cause of research in heart disease. Several of the investigators visited have in turn inspected our new project. Channels for the exchange of information were opened that should benefit all the participants in the years ahead.

Project Design—To provide the care-

ful documentation necessary for effective communication among all involved, a project design for the proposed Cardiovascular Health Center (CVHC) was prepared. It went through three drafts, each being discussed thoroughly by a departmental committee of epidemiologists, internists, and experts in administrative planning and laboratory research. The project design describes the plan in considerable detail, discussing its objectives, stating basic assumptions to be considered, analyzing the attitudes of interested groups and key individuals, explaining how and why the study group was selected, outlining examination procedures and the organizational structure of the CVHC, and reviewing aspects of the general problem of adult coronary disease and hypertension. In all, the project design includes about 12,000 words; what follows is a very brief summary of this material.

The project design lists three main objectives: (1) to detect and follow coronary disease and hypertension among middle-aged male state employees, determining the incidence, prevalence, and progress of these diseases among the group; (2) to follow up all participants to determine the efficiency of various technics for detecting early coronary disease and hypertension; and (3) to develop and evaluate methods of applying them to large groups in the population. In addition, the Albany CVHC will contribute data to aid in later studies of the epidemiology of coronary disease and hypertension and will serve as a core operation about which teams of scientists can develop related projects. It will also notify the participants' own physicians of positive findings, thus leading to early application of preventive and therapeutic measures for the specific persons studied.

The list of basic assumptions included in the project design illustrates the basic policies which should govern the activities of public health agencies during this period of change of emphasis from acute communicable to chronic disabling diseases:

1. A systematic program to control and study coronary disease and hypertension is needed.
2. Some technics are available for detecting coronary disease and hypertension, and those accepted by medical authorities as the most suitable should be utilized.
3. A legitimate function of a state health department is to test the applicability and results of procedures which may help control coronary disease and hypertension, so that information obtained can be disseminated to benefit the state's physicians and especially their prospective patients.
4. The required physical facilities and skilled personnel are available locally, or obtainable if sufficient funds are supplied.
5. The attitude of state employees, physicians, and the general public are such that initial and continued participation and cooperation are assured.
6. It is worth while for private physicians to know when their patients have a heart ailment.
7. The health department has a responsibility to encourage development and validation of screening procedures for detecting heart disease.
8. Additional basic research studies utilizing the CVHC as a core activity will eventually assist in controlling heart disease in the state.

The project design describes in some detail how the attitudes of special groups and key individuals were appraised. An advance timetable of a step-by-step plan was prepared and followed, in order to insure the greatest possible support for the project. This plan emphasized four principles of human relations: (1) participants themselves must have a real part in the planning and execution; (2) word of mouth is a simple and successful means of communication; (3) small-group influence is an important motivation to action; and (4) the entire procedure—planning, executing and evaluating the program—involves health education for staff as well as for participants.

The participant group was selected carefully to provide a large enough population at risk, yet suitable for prolonged follow-up. Statistical predictions for meaningful data dictated a minimum starting sample of approximately 2,000 subjects. Since the risk of coronary heart disease is four times greater among adult males than among adult females, only males were included. This also simplifies the requirements of the examination facility. To limit participants to the very young group would diminish the annual yield of new cases; too many individuals in the older group would reduce the number of observations possible. Hence, a ceiling age of 54 was set. The Civil Service Department in New York State permits retirement with liberal benefits at age 55, so most workers have a strong reason to remain at least until that age. Many continue working until 60 or 65 (Table 3) to obtain additional benefits, and it should be possible to examine many of the age 54 group for another 10 years, if we find reason to do so. Retired participants can still be followed to some degree, since pension checks are mailed regularly. The Retirement System can notify the CVHC when pensioners die and cause of death can then be studied.

The younger age limit for participants was set at 40, because there were about 2,200 male state workers in the Albany area between the ages of 40 and 54. Taking a complete age-sex group as a sample simplified employee relations by establishing a natural, easily understood definition of an eligible subject. Admittedly, this study population is not a representative sample of middle-aged males in New York State. However, the group does include many economic and occupational groups in the general population. Moreover, coronary heart disease and hypertension are so common among all groups of adult males that it was felt that this particular population would be suitable to meet the stated objectives of the project.

Based on the experience of Morris with British physicians covered by disability insurance,[3] some crude estimates can be made (Table 4) of the number of cases of coronary disease which might develop during periodic study of our group of approximately 2,000 adult males. One might expect that between

Table 3—New York State Male Employees Working in Albany —Distribution by Age *

Age	Number		Per cent	
Total	6,010		100.0	
15–19	282		4.7	
20–24	485		8.1	
25–29	725		12.1	
30–34	627		10.5	
35–39	632		10.5	
40–44	842	2172	14.0	36.1
45–49	759		12.6	
50–54	571		9.5	
55–59	439		7.3	
60–64	400		6.7	
65–69	224		3.7	
70 and over	24		0.4	

* Estimated on the basis of reports received from 10 state departments

Table 4—Estimated Number of Cases and Deaths from Coronary Heart Disease Among Middle-Aged Male State Employees in Albany Based on Morris [3]

Age Group	Estimated Population	Cases in 5 years	Cases in 10 years	Cases in 15 years
Total	2,172	49	91	135
40–44 years	842	7	17	37
45–49 years	759	15	33	52
50–54 years	571	26	41	46

100 and 200 cases will occur during a 15-year period of observation. Also, to some degree, the data on the detection of preclinical coronary disease obtained from this study can be compared to findings obtained from other similar projects.[25, 26]

Examination procedures are limited to those tests shown to be effective in detecting clinical coronary disease and hypertension. Procedures used in the first examination include: a complete history and physical examination; blood cholesterol and serology; x-ray film of chest (14" x 17") PA and lateral; 12-lead electrocardiogram and Starr ballistocardiogram, both resting and after the Master double two-step test. A treadmill is also being used as a form of measured physical stress.

The director of the CVHC is identified in the project design as a competent cardiologist with training and experience in the development of team and individual projects in clinical research. A CVHC council governs the center's major policies. Its eight members are divided equally between the State Health Department and Albany Medical College and include the state commissioner of health and the assistant commissioners of Laboratories and Research, Medical Services, and Program Development and Evaluation, the dean of Albany Medical College, the professor of medicine, associate professor of medicine (Cardiology) and the professor of radiology. The formal advisory committee of outside consultants has already been mentioned. The basic staff of the CVHC consists of a full-time director, a consultant cardiologist, a nurse, two medical technicians, a secretary, a receptionist, and 200 physician-days per year of part-time service by qualified internists and cardiologists.

The project design also includes a review of the extent of the heart disease problem and the contributions the CVHC will attempt to make toward its ultimate solution; outlines current anatomical and pathological data in the field, with emphasis on those factors suitable for special study; reviews current literature on technics for diagnosis of early coronary disease and hypertension; describes related projects in other areas, including pertinent comments made by leaders of other study teams; and outlines tentative plans for reporting on the activities and general progress of the CVHC.

Early Operations—The director of the CVHC was secured to serve on the staff of the Albany Medical College as an assistant professor of medicine and to devote half-time to the routine operation of the CVHC and half to cardiological research and teaching. A contract was written with the Albany Medical College covering the project. The State Health Department will continue to meet the major share of the cost, but all quarters and facilities, consultants, and auxiliary services are supplied by the Medical College.

To test the reactions of prospective participants, the social scientist, administrative analyst, and a staff health educator met with about 40 nonmedical "eligible" employees of the State Health Department for an informal group discussion. It was pointed out that the examination was entirely voluntary and that findings on each participant would be sent only to the private physician designated. The individual testing procedures were explained and the routine procedures outlined. All present immediately indicated willingness to take part. Before the official opening a trial run was made on this same group of State Health Department employees. Each participant was interviewed informally afterward and some minor administrative and technical defects were promptly corrected.

On February 26, 1953, eight months after the first activities of the program development team, the center was for-

Table 5—Participation, by Eligible Persons, in the CVHC (February 8, 1954)

Number of Eligible Persons Contacted	Number Examined	Number Now Scheduled	Number Refusing	Per cent Refusing
1,344	1,102	72	170	12.6

mally opened. The governor of the state was the first official participant to receive the complete two-hour examination. Since the start, over 1,250 employees have passed through the CVHC. Personnel officers of state departments have supplied lists of eligibles and the health educator has assisted the center staff in contacting individual participants. Measures used to obtain the cooperation of eligible participants have so far been limited to distribution of a pamphlet and small group discussions. Notification of appointments is made by telephone and mail. The degree of success of these simple and direct recruitment methods may be seen in Table 5. Of the first 1,344 persons offered an appointment at the center, nearly 90 per cent are participating. Follow-up of those who refused appointments will be done later by health educators assigned to the project.

The attitude of the State Medical Society is illustrated by the following official comment which appeared recently in the New York State Journal of Medicine [20]:

> The essence of progress is change. New York State has, for many years, been in the forefront of progressive educational, social, health, and labor legislation. . . . It is therefore gratifying to record a further step in progress, the establishment of the Cardiovascular Health Center in Albany. Under the aegis of its Commissioner of Health, in conjunction with the Albany Medical College, New York State has again taken the lead in a program of controlled heart research. The plan is simple, direct, and practical. The aims of the Cardiovascular Health Center are clear. . . . Those of our readers who study the timely and important proposal for the study of coronary heart disease and hypertension will be well rewarded. . . . We are sure that this long-term study will be a success. We wish it well.

Two administrative changes were made in the procedures as the program developed. By improving the availability of the x-ray unit and by asking patients to complete a large portion of the history before reporting to the center, physician-time per patient has been reduced from two hours to one hour. An investigator skilled in lipoprotein chemistry has been recruited as director of the State Health Department's new protein laboratory and will initiate additional research studies in cardiovascular diseases. Several satellite projects by research groups composed of Medical College and Health Department personnel are already under way or are in the planning stage.

Postgraduate courses in adult heart disease are being held for physicians in the Albany area. The interest shown in this type of session indicates how official health agencies can play a useful role in providing general practitioners with refresher training in coronary disease and hypertension. No longer should public health agencies limit their interest in postgraduate medical education to traditional public health programs. Modern physicians, eager for new information in heart and other chronic diseases, are not interested in sessions on communicable diseases alone. Modern health departments must at least seek to keep up to date, and the field of chronic diseases is wide open if we wish to continue leadership in public health.

As part of the postgraduate education

program, courses in heart disease are being held for key members of the medical staff of the State Health Department. Through these sessions about 30 division and bureau directors are studying how their health programs might be broadened to include research and service aspects of heart disease. At the same time, the cancer and tuberculosis experts are studying ways in which the mass chest x-ray surveys might be of service to heart disease control, as well as to their own special fields.

Discussion

The art and science of public health must change with the progress of scientific medicine. Leadership for this change can come from within the profession itself, and can prove its effectiveness by the profession's initiative in discovering new methods of applying modern knowledge on a mass basis to the control of chronic diseases. What is needed in public health today is a pulling together of the specialties. The division of medicine into various compartments is not always in the patient's best interest and modern health programs involve many such divisions simultaneously. Teamwork in medicine is essential for the most precise diagnosis, the most effective treatment, and for a research approach to many chronic diseases, including coronary heart disease and hypertension.

The search for the etiology of heart disease and arteriosclerosis is being pressed throughout the country by hundreds of research groups. While these studies continue the official health agency should develop effective projects on a research basis for the application of existing knowledge, which at the same time will serve as a hub around which all phases of research can be maintained. Of practical importance to public health is the fact that tests are available for the detection of coronary disease and hypertension. By bringing significant numbers of persons under periodic cardiac examination, the applicability of these screening methods for mass use can be determined. As cases accrue in the study group, the comparative value of the various detection technics, singly or in combination, can be evaluated. During this process of determining the public health benefits and applicability of detection tests, annual complete heart examinations will be offered to a large number of people who would be unlikely to obtain them otherwise. This in itself is a significant contribution to the health of these people and the health education of their families. Persons with newly discovered enlarged hearts, hypertension, rheumatic hearts, arteriosclerosis, or diabetes will then have the best available opportunity to obtain modern medical care by their own physicians after the prompt diagnosis of early disease.

Public health agencies may continue to adhere to a scientific conservatism, but at the same time they must enter boldly into the experimental area by organizing skilled teams for carefully planned projects in clinical and field research. The Albany CVHC is developing entirely under such a plan, in a step-by-step process, beginning with a small but adequate study group, utilizing the best information from consultants in many fields, encouraging satellite projects in basic research, taking advantage of available resources, and welding the whole into a potentially effective frontal attack upon heart disease, the foremost public health problem of our time.

Summary

The steps in the development of the Albany CVHC are outlined to illustrate how modern public health agencies can maintain their leadership during the

present period when a basic change is occurring in the program content of public health. The method described made use of the best available experience and knowledge to appraise the coronary disease and hypertension problem, to generate an interest among public health physicians, and to lead to the formation of effective study teams. Emphasis is placed upon the need to seek out for each new health problem the particular research contribution which the health department can best perform. With its background in epidemiology, mass screening for disease, and postgraduate medical and health education, the New York State Health Department has initiated a program for the periodic examination of an adult population group as its first major effort in the field of coronary heart disease and hypertension.

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Obesity and Degenerative Heart Disease

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One quotation suffices to give the flavor of this revealing study: "It is very simple. We take each person for whom a reliable diagnosis of coronary disease is made and measure him to see if he is fat or thin. . . . This has been done several times recently; the results are consistent—and surprising."

✢ Today, any discussion of obesity in regard to public health should, presumably, concentrate on cataloging the evils of overweight and proposing methods of control, for obesity seems to have been singled out as the current public enemy number one of American health. When we used to say that "nobody loves a fat man," we had in mind only a handicap in amorous adventure. Now, instead of sympathetic smiles, obesity is supposed to rate the kind of indignation formerly aroused by the man who insisted on putting his privy next to the well.

The main reason for this, of course, is the experience of the life insurance companies, beginning with the report of Rogers (1901) on 1,553 men who were 30 per cent or more overweight. The mortality of these policy holders was 35 per cent greater than the expectation for all policy holders. Most comprehensive are the analyses of Dublin and Marks (1952), indicating that overweight men and women alike tend to have a death rate of the order of 50 per cent higher than the general average of policy holders. When the ascribed causes of death are separately examined, the most unfavorable records of the overweight policy holders are for mortality from diabetes, diseases of the biliary tract, appendicitis, nephritis, cerebral hemorrhage, and cirrhosis of the liver, followed by heart disease, hernia, and intestinal obstruction. The heart disease excess mortality (42 per cent in men, 75 per cent in women) is impressive because heart disease, of course, dominates all adult mortality figures in this country, accounting for almost half of all deaths if violence is excluded. This is the reason why the current propaganda for reducing body weight in this country emphasizes the danger of heart disease for overweight people.

In American adults the heart disease danger is primarily in regard to coronary heart disease. From 40 to 70 years of age 61 per cent of the heart deaths of men and 39 per cent of the heart deaths of women are attributed to this single cause, according to the latest available (1949) United States vital statistics. For the ages 40 to 65 the corresponding figures are 65 and 39 per cent. If the elimination of obesity is to have an important effect on mortality, it must reduce the deaths from heart disease and particularly from coronary heart disease.

The insurance company data are a little puzzling when we get down to details. Among the obese policy holders, coronary heart disease (and angina pectoris) accounts for only 46 per cent of the heart deaths among the men and 27 per cent among the women. In other words, it might seem that coronary heart disease, compared to other forms of heart disease, is relatively less important among the obese policy holders than in the United States population as a whole. Then, too, as we shall see, this conforms to other evidence.

It would be interesting to analyze causal relationships in such insurance company records in further detail but the general health implication seems to be clear and there is full steam ahead for a campaign against overweight. Public health workers welcome this the more gladly when they discover that the general mortality picture for adults in the United States is less favorable than in many European countries, in spite of our economic superiority and a vast and expensive medical and public health facility. There seems to be no doubt that Americans tend to be overweight in comparison with Englishmen. Is this not the explanation for the disparity in age—specific mortality rates for adults in the two countries? How else could we explain the fact that currently a 40-year old white American man has 21 per cent more chance of dying (all causes) before 60 than his counterpart in England and Wales? Finally, the clinching point is made by Dublin and Marks that their overweight policy holders who reduced enough to get their policies rerated have a better mortality record than the rest of the overweight policy holders.

Actually, there are a great many questions outstanding and while the propaganda against overweight is all to the good, it may be equally important to try to make a more detailed analysis of the evidence before deciding that weight reduction will solve all our problems. It is proper to note also that there are some definite limitations to the insurance company figures. It can be asked how far the life insurance company policy holders, for whom there are acceptable records of height and weight, can be accepted as truly random samples of Americans. It may be noted, also, that the body weight records, with rare exceptions, only refer to the situation when life insurance was issued and there is very little information on the lifelong obesity habitus of the policy holders. Then there is the very important point that all of these insurance statistics refer primarily to major degrees of overweight. I have not seen a satisfactory breakdown of the proportions of different degrees of overweight in the policy holders studied, but it does appear that the statistically significant figures for excess mortality in overweight policy holders refer to 20 to 74 per cent overweight and an average of perhaps between 30 and 40 per cent overweight. This means, for a man of average height, perhaps 50 or more pounds heavier than the average of American men of that age and height. What percentage of American men weigh 50 or more pounds than this average? A little simple arithmetic shows that the insurance company data on the excess mortality of overweight men will not account for the current excess mortality of American men as compared, for example, with Englishmen, or Swedes, or Dutchmen or Italians (cf. Keys, 1953). Table 1 gives a sample of relevant data. The average American adult may weigh 7–8 per cent more than his English counterpart (Kemsley, 1952, 1953). The insurance data would not predict any mortality differential from this weight difference, but the national mortality statistics indicate a very great excess of cardiovascular mortality among the Americans.

One major question that arises from

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Table 1—Mortality per 1,000 Men Aged 45–54 (Average of Rates for Ages 45–49 and 50–54) in 1949 in the United States (Whites), in England and Wales, and in Italy

Cause	United States	England and Wales	Italy
1. All causes	10.03	8.39	8.68
2. " less infective and violence	8.17	7.24	6.26
3. All heart disease	4.23	1.87	1.37
4. " plus bronchitis and pneumonias *	4.44	2.69	1.89

* To allow for the possibility that some deaths attributed to heart disease in the United States might be attributed to bronchitis or pneumonia in England and Wales and in Italy, or both

the insurance company data is that they treat weight as a single entity. But are fat and muscle identical in this regard? Metabolically, they represent almost opposite extremes and it must be remembered that the concern here is primarily about diseases of a metabolic origin or nature. Elsewhere we have discussed the complicated problem of body composition and the question of weight versus obesity (Keys and Brozek, 1953). An athlete in good training is not fat but he may be, and frequently is, "overweight." Conversely, many a person, especially in America today, is fat but not particularly "overweight."

Any person who is 30 per cent or more "overweight" is very likely also to be overfat to a considerable extent, but at lesser departures from average weight no such prediction is possible. If "overweight" is so important, and the insurance company data indicate it is, then it is certainly important to analyze it in more functional and metabolic terms. A few of us are attempting to do this, but this is not the time to pursue this complicated question further.

In the present discussion the emphasis is on obesity and mortality rates. The antiobesity campaign is based on the theory that obesity "causes" excess mortality. Remembering that so far all the data on obesity are really only on "overweight" and that the largest contributor to the excess mortality of overweight persons is listed as heart disease, with coronary heart disease being the major type, it would seem to be imperative to examine the relationship between coronary heart disease and relative body weight in the light of all available evidence, not merely that contained in insurance files. Also, there is other evidence that cannot be ignored.

The most elementary evidence on the question of simple relationship between obesity and coronary heart disease is obtained by sampling people with coronary disease and comparing them with the general population in regard to relative obesity. At this stage it is premature to be concerned with cause and effect; we shall be content at first merely to ask about the association between two conditions. It is very simple. We take each person for whom a reliable diagnosis of coronary disease is made and measure him to see if he is fat or thin or express his body weight as a percentage of the average for healthy persons of the same height and age. This has been done several times recently; the results are consistent—and surprising!

The first study for consideration is already a classic although it was published only five years ago (Yater, et al., 1948). This is an exhaustive analysis of 866 cases of coronary disease under the age of 40 years in the U. S. Army during the period of World War II.

Diagnosis was established at necropsy in 450 men. A preliminary report on 80 of these cases concluded that overweight was an important etiological factor in the disease of these young men (French and Dock, 1944). Unfortunately, the weight standard used for comparison was the distribution of body weight in soldiers at the time of induction into the Army; the fact was overlooked that practically all of the soldiers gained weight thereafter. Still more unfortunately, this erroneous preliminary report has attracted wider credence than the subsequent proper analysis. When the soldiers dead of coronary disease were compared with 297 soldiers of equal age and length of service killed in military accidents at the same time, the distribution of relative body weights in the two groups at the time of death was substantially identical. Furthermore, when the records at the time of induction were examined, the men destined to die of coronary disease were statistically not distinguishable in relative body weight from the rest of the inductees. Finally, there was no real difference in relative body weight between the soldiers who died of coronary disease and those who survived an acute myocardial infarction, the latter, if anything, tending to be more overweight. At the time of induction 43.4 per cent of the men destined to die of coronary disease were classed as "overweight," and 50.2 per cent of those destined to survive an infarction were so classed, the definition of "overweight" being simply a relative body weight within the upper 37.5 per cent of the distribution of all inductees. Some of the relevant data are given in Table 2. Incidentally, it is fair to remark that the accuracy of body weights and diagnoses for these soldiers is certainly better than for the 629 men listed as dead of coronary disease in the life insurance data (Dublin, 1952).

Another careful study on coronary disease in men before old age concerns 97 Bostonians who survived myocardial infarctions (Garn, et al., 1951). These men were exhaustively compared with clinically healthy men, matched for occupation and age, in the same city. Both groups tended to be overweight in comparison with "standard" Army figures, but there was no real difference in relative body weight between the coronary patients and their healthy counterparts. The men with infarctions averaged 170.5 pounds and 67.6 inches in height; the corresponding values for

Table 2—Distribution by Relative Body Weight of 233 Fatal Cases of Coronary Heart Disease and 297 Men Killed in Accidents in the U. S. Army During World War II. Relative Weight Classification Based on the Heights and Weights of All Inductees at the Time of Induction Into the Army.*

Relative Weight Class	At Induction		At Death	
	Coronary Disease	All Inductees	Coronary Disease	Accidental Deaths
Markedly under	14.2	12.5	4.8	3.5
Underweight	19.7	25.0	9.8	10.5
Normal weight	22.7	25.0	21.0	23.0
Overweight	28.8	25.0	43.4	42.6
Markedly over	14.6	12.5	21.0	20.4
Total	100.0	100.0	100.0	100.0

* From Yater, Traum, Brown, Fitzgerald, Geisler, and Wilcox, Am. Heart J. 26:346, 1948.

the controls were 176.9 pounds and 69.4 inches.

These two studies, and there are no other reports in opposition, clearly suggest that up to the age of 40 or so, there is no important association between relative body weight and coronary disease in such populations as represented by army inductees in wartime or Boston businessmen in the postwar years. But a similar lack of an important relationship between these two variables also appears in a less restricted age group in the mid-South as represented by carefully attested cases of acute coronary insufficiency or occlusion in Nashville, Tenn. (Billings, et al., 1949). In the total of 240 patients, 228 were 40 years or older and the 30-day mortality was 44 per cent. Two-thirds of these patients were of normal weight or less and the authors pointed out that the only remarkable feature in regard to obesity was the high immediate mortality of the underweight patients.

A valuable study of the prognostic significance of overweight for heart disease in 22,741 Army officers must be mentioned here (Levy, White, Stroud, and Hillman, 1946). Overweight was found to be followed by a significantly higher incidence of hypertension, but did not significantly alter the death rate for cardiovascular-renal disease, nor was there any evidence for any relationship with coronary disease.

Finally, in our own experience in Minnesota we have detailed data on 60 consecutive cases of men with definite coronary disease between the ages of 46 and 62. Again, as in the other series, some of these men were fat and overweight, but others were thin and underweight; the group average body weight was 100.9 per cent of the standard average in this country for healthy men of the same height and age. Fifty-eight per cent of these men were within ± 10 per cent of standard average weight and 18 per cent of them were 10 or more per cent underweight.

Personally, I have no doubt that heart disease, in general, is unduly frequent, or at least mortality from these causes is higher, in persons who are 50 or more pounds heavier than the general population average. However, whether this relationship holds for smaller degrees of overweight is certainly debatable. In the range of plus or minus 30 pounds from "standard" weight of a man of average height, obesity as fatness and obesity as excess weight are by no means identical. Finally, it is proper to question whether obesity and coronary disease are simply related. Certainly, there is little or no evidence for "explaining" coronary disease as a matter of overweight.

The basis for the vast majority, 95 per cent or more, of coronary heart disease is now recognized to be atherosclerosis of the coronary arteries. The cause of the atherosclerosis in turn is the great question, of course, but there is no doubt that cholesterol derived from the blood and deposited in the arteries is centrally involved. Statistically, though not necessarily in the individual, the most reliable index of the atherogenic tendency currently available is the concentration of cholesterol or cholesterol-bearing lipoproteins maintained in the blood. These facts suggest, then, that exploration of the relationship between obesity and blood or serum cholesterol concentration should be informative in regard to the problem of coronary disease.

Our first studies some years ago on this point were done on several hundred Twin Cities' business and professional men of middle age (Keys, 1949). We found a very small correlation between relative body weight and serum cholesterol. This was of questionable statistical significance and of still more dubious biological significance. Similar

studies have been repeatedly made since in Minnesota and recently in England, Italy, and Spain. In each case, when men of equal age but of different degrees of relative body weight were compared, there was either no or only a trivial relationship between relative weight and serum cholesterol (cf. Keys, et al., 1954). The same absence of an important relationship resulted when, instead of body weight, more direct measures of fatness were used.

At the time these studies were being made on body weight and serum cholesterol, it was also of interest to examine the vital statistics for the several countries (Table 1). The data indicated that the relatively thin Englishmen have less heart disease and less coronary disease than Americans of the same age, but the relatively fat Italians are even more fortunate than the Englishmen (Keys, et al., op. cit.). If, instead of coronary disease, the figures for all heart disease are considered, the same relationships hold. On the other hand, the average serum cholesterol concentrations found in middle-aged men in these countries corresponded directly to the mortality rates ascribed to coronary or to all heart diseases in the same countries, the order, from highest to lowest, being: the United States, England and Wales, and Italy.

Possible explanations for these differences in serum cholesterol concentration, and in the related incidence of coronary disease, have been discussed elsewhere (Keys, 1952, 1954). The diet certainly seems to be involved but not simply as reflected in the tendency to be more or less overweight. In controlled experiments on man we have found that the serum cholesterol rises during the active stage of gaining weight (and body fat) from overeating (Anderson, Keys, and Lawler, 1953). But in the steady maintained state of obesity the serum level seems to reflect the character of the diet rather than relative fatness of the individual. And, when weight is being lost on a reducing diet the serum cholesterol also tends to be influenced by the character of the diet as much as by its amount or by the rate of weight loss.

That all of these questions are of great importance and demand much more extensive research goes without saying. So far the evidence is far too fragmentary to come to final conclusions, but some tendencies are apparent and some essential points in the analysis are obvious.

First, the distinction between overweight and overfat is important and must be made in future critical researches. Second, it is imperative to distinguish between the atherosclerotic process and the clinical picture. It is reasonable to suggest that of two men with equal degrees of atherosclerosis one may seem to be clinically normal while the other suffers disability and death, the difference being in the strain or work load put upon the heart. Other things being equal, the work load of the heart is related to the gross body weight, simply because a large part of the job of the heart is to pump blood to cover the metabolic cost of moving the body around. In this way the gross body weight may contribute far more to the clinical picture than to the more primary damage to the coronary arteries.

The question of the role of physical activity demands consideration at this point. The work load on the heart is increased both by increasing body weight and by increasing the frequency or extent of physical movements. As the demand for circulation is increased, eventually a point is reached where the heart cannot meet it. This does not necessarily mean cardiac catastrophe. In the healthy heart, with healthy coronary arteries, the result is simply fatigue, general exhaustion, and breathlessness which force a reduction in physical activity. No real damage is

done because the heart itself is not really exhausted. In fact, the heart may be "trained" thereby and thus become more able to meet an increased work load. But in the heart with a restricted coronary arterial supply, cardiac hypoxia may develop before the peripheral hypoxia which normally gives the signal to reduce the physical activity. The pain of angina pectoris is referred to hypoxia of the heart itself.

H. L. Taylor, Ph.D., and others in the Laboratory of Physiological Hygiene have been studying the cardiac output and total blood circulation in clinically healthy men of different relative body weight and of different degrees of actual fatness. Perhaps the most useful measure of the reserve power of the heart to meet the demands of exercise is the average difference in oxygen content between the arterial and venous bloods.

This difference is found to be reduced in obesity as measured by actual fatness, but the relationship is much less clear when obesity is inferred from body weight alone. The arterial-venous oxygen difference is relatively small in fat young men but not in overweight young men who are not fat; many athletes are in the latter category. The middle-aged men we have studied tend to be like the fat young men in respect to the arterial-venous oxygen difference though they are not classed as overweight. But fatness measurements on the middle-aged men show them to be, in fact, about as fat as the fat young men.

Along some such lines of detailed analysis of body composition, of physiological function, and of the development of atherosclerosis, real progress for future understanding may be predicted. Step-by-step cause and effect analysis, rather than purely empirical correlation studies, should resolve the apparent discrepancy between insurance company data and direct studies on coronary patients. More important, from this approach we may hope for full understanding in the broadest sense. In part, this is why some of us hold such high hopes for the future of the marriage of hygiene and physiology which we call physiological hygiene.

At this stage, rapid progress is being made in understanding the nature of the problems and in discovering the kinds of research needed to answer both theoretical and practical questions about obesity, overweight, and health. Only a few conclusions would seem to be safe now.

Overweight per se, except when it is of extreme degree, is not a primary cause of coronary disease and the myocardial disorder to which it gives rise. There is some evidence that overweight may contribute to the development of hypertensive heart disease, however.

Compared with most other parts of the world of which we have information, men, and to a smaller extent, women, in the United States have a grossly excessive incidence and mortality from coronary and degenerative heart disease in general.

Dieting to lose weight is highly desirable in true obesity, but a mere reduction in general food consumption is not likely to accomplish reduction of our heart disease mortality to the level prevailing in those countries with the most favorable records in this regard.

Large-scale, long-range studies bringing physiological principles to bear in research on population samples are essential if preventive measures against heart disease and other metabolic ailments are to be discovered and brought into application. Campaigns against overweight are of benefit but cannot be a substitute for research or for a knowledge of physiological hygiene which we do not yet have.

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Lasker Medical Journalism Awards

David Dietz, science editor of the Scripps-Howard Newspapers, and Bill Davidson, Collier's contributing editor, were named winners (May 27) of the 1953 Albert Lasker Medical Journalism Awards for outstanding reporting on medical research and public health in the newspaper and magazine fields, respectively. A special award for achievement in medical journalism during 1953 was also conferred on The New York Times, with a citation for its pioneer science editor, Waldemar Kaempffert.

Mr. Dietz was selected for his series of articles on the care of poliomyelitis patients published in the Cleveland Press in August, 1953. Mr. Davidson was cited for his article "The Truth about TB Miracle Drugs" published in Collier's magazine in the same month. The New York Times was singled out for "the excellence of its medical reporting and the comprehensive scope of its day to day coverage of man's war against disease and death," including Mr. Kaempffert's weekly columns, "Science in Review."

The awards were announced by the Lasker Foundation in cooperation with the National Association of Science Writers and were administered by the Nieman Foundation for Journalism, Cambridge, Mass. The awards consisted of $500 each, a scroll describing accomplishments, and a silver statuette of the Winged Victory of Samothrace, symbolizing victory over death and disease. The annual Medical Journalism Awards were created in 1949 to encourage the writing and publication in general newspapers and national magazines of outstanding articles on the improvement of public health and the prolongation of life through medical research.

Problems in the Development of Prepayment Dental Care Programs

W. PHILIP PHAIR, D.D.S., M.P.H., F.A.P.H.A.

If medical care is an insurable service, why cannot dental care also be provided on a prepayment basis? There are differences. Some of the factors that seem to militate against a wide adoption of any dental care program are discussed objectively here.

✣ Many factors interfere with the provision of complete dental care on a periodic basis for all people—factors which oftentimes are somewhat more important than the cost of dental care. Nonetheless, there is no disputing the fact that cost is a highly important factor in determining whether or not an individual seeks dental care on a regular basis. The dental profession has been interested for many years in the development and wider use of more satisfactory methods by which individuals can finance their dental care. The development of such financing plans will contribute significantly to the attainment of better dental health for more people.

Accomplishments to Date

As part of its program to help make dental care available to more people, the Council on Dental Health of the American Dental Association has given serious study to the development of plans for the prepayment of dental care. In fact, following a two-year study that began in 1942, the council drafted a rather detailed plan and recommended that such a program be undertaken by dental societies on an experimental basis.[1] In 1949 the House of Delegates gave added official support to the council's action with the specific recommendation that "experimental prepayment plans for dental service should be inaugurated by dental societies." [2] Early in 1953 the council prepared a brochure entitled, "Summary of Available Information on Prepayment Dental Care Plans," [3] which was designed to provide rather comprehensive reference material for individuals and organizations concerned with financing dental care through the application of the prepayment principle. It seems pertinent at this point to quote a paragraph from the foreword to this brochure:

> The fact that hospital care and certain types of medical and surgical care can be provided successfully under prepayment plans does not necessarily prove that dental care can be provided successfully under a prepayment system. Because of the wide distribution and frequent occurrence of dental defects, there have been many expressions of doubt regarding the feasibility of financing dental care by a prepayment plan. On the other hand, no credible evidence has been presented to prove that the prepayment principle cannot be applied to dentistry. It is possible that the question can be answered, at least partly, through the application of logic. It is possible, also, that the question cannot be answered completely until additional facts are obtained through actual experience.

The council recommended principles relating to the establishment of prepayment dental care plans and these principles were adopted by the House of Delegates at its 1953 annual session.[4] Despite these continuing recommendations for the establishment of experi-

mental prepayment plans, relatively little of a concrete nature has been accomplished.

The Group Health Association plan in Washington, D. C., provides dental services for its subscribers through a group clinic practice. It is hoped that, in time, subscribers may pay for their dental care on an insurance basis.[5] Another clinic plan, which is said to operate somewhere on a prepayment arrangement, is that of the Labor Health Institute of St. Louis. Consolidated Edison of New York and Endicott-Johnson provide relatively comprehensive dental care to employees.[6] Two private practitioners of dentistry have described prepayment plans they attempted in their own offices and later abandoned.[7, 8] The Farm Security Administration, during its depression-day operation, undertook a type of prepayment plan for health services which included dentistry.[9, 10] In their health plans, some commercial insurance carriers have included dental benefits, most of which have since been dropped. A very few Blue Shield plans provide dental surgical benefits.[11] Several other prepayment programs have been proposed but, so far, have failed to get under way for a variety of reasons.[12-14]

Blocks to Development of Plans

It should be profitable to consider some of the road blocks or handicaps that, at least collectively, present a rather formidable barrier to a more rapid development of the application of the prepayment or insurance principle to the payment of dental services. Here are at least 10 of the blocks:

1. Lack of Basic Data—Although many data that might be used in the formulation of prepayment plans are available from various sources, no one agency or individual has collected into one usable and readily available volume the basic facts needed to establish a dependable actuarial background with which to begin a plan. Included in the needed compendium should be the experiences of plans now in operation and of other plans that have been discontinued. Any group that intends to embark on a prepayment dental care program will need to spend a considerable amount of time and effort in making such a compilation and in interpreting it for a specific purpose.

2. Need for an Administrative Structure—With few exceptions, an entirely new corporation must be established in order to administer a dental prepayment program. Blue Cross and Blue Shield representatives advised the Council on Dental Health during a recent conference [15] that it might be possible to purchase administrative assistance from the Blue Cross organization but that a separate organization would be required to handle most dental aspects of the plan. The problem is not insurmountable, but it is one hurdle that must be cleared.

3. Special Administrative Problems—Numerous administrative difficulties will be encountered that will be quite different from those found in handling medical programs. One of the difficulties, for example, is that of dealing with a very large number of individual services (thousands of fillings, extractions, bridges, etc.) in proportion to the number of individual people served and the cost per service. Again, the problems are not insurmountable, but they will be trying and their solution will require ingenuity, skill, and serious interest on the part of some pioneers.

4. Unavailability of Underwriting

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Funds—For several years Group Health Dental Insurance in New York City has had a well defined plan just on the verge of beginning. It has been approved by the dental society concerned; the administrative machinery is ready to go into motion whenever the word is given; and it has a background of years of intense study by its sponsors. Modifications in the plan were made from time to time to reduce the amount of the capital needed in order to get the program under way; the program's sponsors made concerted efforts to stimulate philanthropic foundations, commercial concerns, and others to put their trust—and their money—in the value of such an experiment; and yet the lack of underwriting funds was a major stumbling block for several years. Finally, it is reported that the plan is about to begin operation in 1954.[16]

5. Resistance to Change—There is a certain amount of inertia which characteristically slows down the development of many worth-while endeavors. Prepayment dental care programs suffer from the same inertia, and it ranges from obvious reluctance on the part of many dentists to change their methods of practice in any way at all to the setting in motion of a much larger wheel—the nucleus of persons who are convinced of the need and the feasibility of such a plan and who are so fired with enthusiasm that they will continue to push full time until the plan becomes a reality. The need to find more persons of this caliber and health agencies to lend them leadership, to encourage them, and to pay them living wages while their zeal becomes productive can hardly be stressed enough.

6. Backlog of Unmet Needs—Everyone who has considered the inauguration of dental prepayment plans has realized that one of the most formidable problems is the result of accumulated neglect in the mouths of most candidate subscribers. Many devices for overcoming this inherited backlog have been proposed, and some of these methods have been tried. The obvious method, of course, would be to begin the program with infants only. This might be a sure way to start with a clean slate, but the "sale" of such a plan would be unlikely. Two dentists who started private prepayment plans with their own patients[7, 8] began their programs with children; likewise, various proposals have been made for large-scale programs beginning with young children for whom accumulated needs might easily be met. One such plan has been proposed by the Illinois State Health Department.[14]

Experimental treatment programs were conducted by the Public Health Service in Woonsocket, R. I., and in Richmond, Ind., designed primarily for purposes other than prepayment.[17] When the programs were completed and the Public Health Service left the communities, practically all of the children were on maintenance dental care with no backlog of accumulated needs. Many persons felt these communities would have served well as experimental areas for prepayment dental programs, but such plans failed to materialize.

Other proposed plans would require the candidate to have his dental needs completely met before he is accepted as a subscriber on a prepayment basis—a rather stringent requirement and a difficult one to meet. One plan which facilitates meeting this requirement couples a postpayment arrangement for the accumulated needs with a prepayment arrangement for the needs which will arise during the years the individual subscribes to the plan.[12]

7. Unknown Number of Eligibles Who Will Seek Benefits—Because most dental care can be postponed by the individual and most dental services are more or less elective in nature, it is exceedingly difficult to predict how many subscribers to the plan will de-

mand all services to which they are entitled in any given year. No doubt, this is one of the largest unknowns in planning for a prepayment dental care program. One would logically suppose that the demand for services would be higher than that the same group of people might seek if they were not under a prepaid plan, but the question is, "How much higher would the demand be?"

8. Keeping Patients on a Maintenance Care Basis—Not only is it important that subscribers come into the plan with all necessary dental work completed, but it is also important to the financial success of the plan for subscribers to remain on a maintenance care basis. (Maintenance care involves the filling of each new cavity before it becomes a large one and the adequate treatment of all defects before disease has progressed to the point where teeth must be extracted and more expensive appliances placed.)

The difference in initial and maintenance care is related to costs and is likewise related to the time required for treatment. The Woonsocket, R. I., and Richmond, Ind., studies, for example, demonstrated that a dentist could handle four times as many patients on maintenance care as he could for those who required treatment for accumulated defects. The development of technics for motivating or requiring patients to maintain their mouths in a healthy condition will challenge the administrators of all prepayment dental care programs.

9. Willingness to Pay Added Premiums—Many administrators of health insurance programs believe that people now are paying very nearly the top limit of what they are willing to pay, in advance, for health services through existing Blue Cross, Blue Shield, and other health service plans. There is considerable speculation as to how much additional most persons would be willing to pay to entitle themselves to prepaid dental services.

Whether or not people are willing to undertake to pay their dental care costs ahead of time—at the premium rates that will be required to make plans financially sound—is a question that can be answered only by actual experiment.

10. Complacency About Dental Disease—During the past 25 years the appreciation of the public for dental health has increased tremendously. For example, dentists now are caring for approximately 50 per cent more patients than they did 25 years ago. With better methods and wider application of dental health education technics, the public appreciation for dental health will undoubtedly continue to increase. However, the fact that so many people consider dental disease inevitable and the wearing of artificial dentures just a natural part of growing old makes it extremely difficult to convince the public that dental decay can be prevented, that early and regular treatment actually is a sound financial investment, and that bridges and dentures are not just the natural result of growing older but the result of neglect. The replacement of this complacency with a conviction on the part of the public of the value of dental care would do much to relieve the guesswork and doubts of those who would plan a prepayment dental care program.

American Dental Association Principles

From time to time the Council on Dental Health is requested to comment on specific prepayment dental care programs that are either being proposed or in operation. In order to assist dental societies in evaluating the desirability, practicability, and soundness of specific plans (for the payment of dental care on a similar basis as the Blue Shield

plans), the council proposed a set of principles which were adopted by the association's House of Delegates at its annual session in 1953.[4] The nine principles are:

1. The plan should be developed, maintained, and promoted to the public with the advice of authorized representatives of the local or state dental society.
2. The plan should foster and encourage the provision of a high quality of dental treatment.
3. The dentist who serves the patient must have complete freedom and responsibility in recommending treatment as his own professional judgment dictates.
4. The patient must have freedom to choose the dentist to whom he may wish to apply for treatment. Similarly, the dentist must have the right to accept patients who apply for treatment. In order to safeguard this freedom of choice, the dental care plan should not contain rules or regulations to exclude ethical and legally qualified dentists from participation in the plan.
5. The plan should make provision for direct payment to the dentist.
6. All rules and policies that are related to the dental aspects of the plan, including examination, diagnosis, treatment, prevention, and professional education, should be determined by officially designated representatives of the dental profession.
7. Fees for dental services paid to dentists under the plan should be determined by authorized representatives of the dentists who will render the dental services. In all cases, payments should be consistent with the provision of high-grade dental service.
8. The plan should designate explicitly both the type and amount of service and the conditions under which it will be provided so that both the patient and the dentist will know exactly the extent of their participation in the program.
9. Sound and efficient business practices should be used in the management of the plan in order to assure low administrative cost.

Because the association has stated that "Every effort should be made to use to the maximum extent existing facilities for rendering dental health services," the Council on Dental Health has recommended to dental societies that "the most urgent need in the development of experimental prepayment dental care programs is for experience to determine in a specific community the feasibility, practicability and desirability of conducting such programs through already established facilities which usually are the offices of private dental practitioners." [6]

Three More Questions

The growing interest of labor unions in comprehensive health care programs for their members suggests that health centers and group practice arrangements will receive the greatest amount of emphasis as forms of rendering dental care during the next several years.

The proposals of labor unions for health care programs and their criticisms of some programs now in operation raise three rather pertinent questions which can be answered, in part, from the administrative experience of certain programs and, in part, from decisions based largely on the desirability of certain aspects of the programs. The three questions are these: (1) Is it a "must" that all dental services in the programs be insurable according to the traditional concept of insurable risks? (2) Are wide-scale clinical practices desirable and efficient, from the standpoint of the dentist who will work in the clinics and from the standpoint of the patients who may be relatively limited in their choice of dentist and inconvenienced by the distance they may sometimes have to travel to obtain dental services? (3) Should the program provide for complete dental service with no provision for additional payments of any kind by the subscriber directly to the dentist, and should benefits be entirely service rather than cash indemnification up to a certain amount? The answers to these questions will not be easily found—nor, perhaps, readily acceptable to all the persons concerned. The answers will be found, however,

through increased experience with a variety of plans.

Next Steps

What are the next steps that must be taken to put prepaid dental care programs in operation on a wide scale? It seems that the two first and most important ones are these: (1) Background data must be collected and assembled into usable form. Much information is already available, and some individuals or agencies must soon accept the responsibility for its collection, assembly, and distribution. (2) More pilot or experimental studies should be undertaken. Promotional effort for such studies should be forthcoming from professional dental and public health groups and from interested citizen groups.

Dollar, in concluding his remarks about prepayment dental care programs before the President's Commission on the Health Needs of the Nation last year,[5] said that, "There is a major educational job to be done before public acceptance can be had . . . the best educational approach will be to seek out groups where such a plan can be expected to succeed, set up a prepayment plan, and give a public demonstration of the effectiveness of such a program in meeting both the economic and health problems of dental care." I, too, conclude with a plea for additional pilot studies to determine the economic feasibility, the public acceptance, and the practicability of programs for the prepayment of dental service costs.

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Dental Program of the St. Louis Labor Health Institute

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In the situation described here it has proved feasible to include most dental services in a medical care program. The cost per dental patient per year was $13.77.

✣ In 1945 the International Teamsters Union, Local No. 688, of St. Louis, Mo., initiated a comprehensive medical care program for its members. In 1950 all except a small proportion of the members of this union and their dependents were eligible for medical care under this plan. The historical development and expansion of the service, known as the St. Louis Labor Health Institute, has been described in many publications.[1]

The LHI, as it is popularly known, is incorporated under the nonprofit corporation laws of the State of Missouri. The policies and management of the corporation are conducted by a board of trustees, elected by the members at an annual meeting, one-third of the board being selected annually. The board of trustees elects the officers of the corporation. The board meets quarterly, but the executive committee of the board meets monthly. The traditional patient-physician relationship has never been violated by the board.

The Board of Trustees selects a medical director who must be approved by a Medical Conference Board which is a consultative body composed of eminent physicians and dentists of the community. The medical director is charged with the selection of the medical and dental staff. The medical, dental, and auxiliary personnel is decided upon after consultation with the executive committee of the professional staff and with the approval of the chiefs of service, following criteria commonly followed in teaching hospitals. The personnel so chosen must be approved by the entire staff and are submitted to the Board of Trustees with this recommendation.

Prepayment is made possible by collective bargaining agreements in which the employer agrees to pay to the Labor Health Institute an amount equal to 5 per cent of the gross payroll of the union members employed. These funds provide medical and dental care, including care at the medical center, in the patient's home, and in the hospital. This comprehensive prepaid medical care is provided in an excellently equipped and designed office building in downtown St. Louis. The medical center occupies three entire floors. The staff is organized as a group, insuring ease of referral, ready access to laboratory, x-ray, and other diagnostic facilities. There is a successful effort to maintain the personal physician and dentist concept. The staff is organized into 14 services—representing all of the usual specialties—and at the present time requires the services of 52 part-time physicians and dentists. Arrangements have been made with members of the less common specialties in the community so that there is no condition that is not readily accessible to specialist skill.

The planners and organizers of this medical care plan held that dentistry is as much a part of a good health program as any specialty of medicine, and the department of dentistry has been

accepted as a medical specialty. The dentists attend the staff meetings and participate in the administrative conferences on the basis of equality with the physicians. The Dental Department occupies two-thirds of one entire floor of the medical center. There are seven dental chairs with their supporting equipment, of which one chair is reserved for emergency cases. There is a complete dental x-ray facility, the x-rays being taken by a registered nurse who has had special training and who is, in addition, supervisor of the ancillary personnel of the Dental Department.

The 10 dentists are all on a part-time status, working from 12 to 29 hours weekly. They are selected according to the following criteria: (1) they must be graduates of Class A dental schools; (2) licensed and registered to practice in the State of Missouri, (3) those with specialized skills must have postgraduate training leading to proficiency in that dental specialty, (4) membership in local, state, and national dental societies, and (5) character references are requested and required.

Although several of the dental professional staff have specialty qualifications, they prefer to do general dental practice. There are frequent "corridor consultations," so that the patient has ready access to the knowledge and skills of those possessing special training. There is no hesitation in referring patients with special problems to those dentists with proficiency in the special skill called for, since the fear of losing a patient because of referral is not a factor.

All dentists maintain a private practice, and are paid on a flat hourly schedule which eliminates the fee for each service that would present problems of arriving at such a fee schedule. Incidentally, it would be prohibitively expensive from a budgetwise point of view. The flat hourly fee places no premium on the amount of work done or the number of patients seen, since it is well known that physicians and dentists perform at widely varying rates in so far as the number of patients seen and the rate at which they see patients. Requiring dentists to see the same number of patients in a given hourly schedule might cause a decline in the quality of care.

At the beginning of the dental care program, it might have been difficult to obtain dentists on a full-time basis because of doubts about prepaid dental care and because of opposition by the local dental organizations. There has been relatively little turnover of the dental personnel since the initiation of the dental care department. The number of acceptable applicants has been maintained over the years and at present shows no decline. The system of part-time dentists has been quite satisfactory and there would be great reluctance to convert to full-time dentists. The remuneration of the part-time dentists by the LHI serves as a known constant supplement to their private practice compensation, however variable this latter factor may be.

The only restriction placed on the dentists regarding the type of work that they may perform is in the specialty of orthodontics—which is not provided for; all other types of dental service are rendered, the only consideration being the suitability for the preservation of the dental structures.

A dental laboratory is not maintained at the center. The dental staff believes that the utilization of the private laboratories is more satisfactory, and our relations with private laboratories has been excellent. The dentists have stated

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Dr. McNeel is medical director, Labor Health Institute, St. Louis, Mo. This paper was presented before a Joint Session of the American School Health Association and the Dental Health and Medical Care Sections of the American Public Health Association at the Eighty-first Annual Meeting in New York, N. Y., November 12, 1953.

that laboratory technicians having special skills can be employed by private laboratories because of the volume of business, but if LHI had its own laboratory the employment of technicians skilled in special procedures would be prohibitively costly. The cost of equipping and maintenance of a dental laboratory also would be sizable.

A dental assistant is assigned to each dentist.* The dental assistants are selected on the basis of training and aptitude, using as nearly as possible the qualifications formulated by the Association of Dental Assistants. No dental hygienists are employed. It is said that there are no dental hygienists in the St. Louis area. However, dental hygienists would be a useful adjunct to the dentists, as well as reduce the appointments by dentists for general prophylaxis, and it is hoped that this service can be added in the near future.

The types of dentistry provided can be classified as: (1) Emergency and (2) routine. Emergency dentistry includes acute pain; accidents, such as broken teeth, fractures of the supporting bony structures of the teeth; and acute infections. Once the dental patient has been seen for these conditions, it is fairly easy to persuade him to return for full-mouth dental x-rays and complete dental clinical examination to be followed by appointments for whatever additional dental care is indicated.

The routinely appointed dental patient is initially scheduled for complete dental x-rays, after which a thorough clinical examination of the teeth and buccal cavity is made. If the member of the plan had not been seen previously in the medical center, an appointment is made for complete physical examination, which includes a medical history, physical examination, blood counts, blood serology, urinalysis, chest x-ray, and any other indicated examinations and consultations. The patient is allowed to select the physician and dentist of his choice from those on the staff.

The member is scheduled for appointments, after this first visit, for the purpose of complete prophylaxis, fillings of carious teeth, the reconstruction of bridges or dentures in order to restore the dental mechanism to proper health and function.

One of the essential requirements of the dentists is the education of the patient as to the procedures to follow in the rehabilitation of his dental structures. Instruction is given on proper prophylaxis and on any other personal care required after the completion of the patient's entering dental requirements.

Because the membership eligible for service at the LHI is a low-income group (average weekly wages are $40–$60), they have not in the past always availed themselves of dental care. As a result their teeth had been neglected and in many cases the mouths of these members and their dependents were in deplorable condition, this being especially true of deciduous teeth. Thus, a great amount of initial restorative dentistry was required. As this backlog of restoration of the dental structures is reduced, more attention can be and is being given to maintenance. Consequently, the cost of the dental department should be reduced and eventually reach a plateau provided the membership does not fluctuate widely and the utilization rates remain constant.

The only added expense to the members and their dependents is for bridges, partial and full dentures, the member paying only the laboratory fee for the prosthetic appliance. If orthodontic treatment is required the member must assume this expense and arrangements will be made for such care with qualified specialists in the community.

The clinic equipment, valued at $17,436, is considered adequate and is

* There are seven dental assistants; these are adequate for the 10 part-time dentists.

in some respects better than that in private dental offices.

The chief complaint that members of the plan offer is that the appointments are spaced too far apart or that the waiting period is long, but until more dental hours can be allotted, this problem cannot be solved. The problem of broken appointments has been attacked by several methods since this is another reason why the waiting periods are longer than one might desire.

Hollister [2] touches on some of the reasons why it is difficult to persuade participants to avail themselves of the services and perhaps why broken appointments are a problem. He suggests: (1) a better understanding of the "problem patient"; (2) allaying the public's "general fear of dentistry"; and (3) learning the skills of motivating people to accept and follow through on dental procedures.

Convincing the membership to report for periodic examinations and prophylaxis is being cautiously attacked by a health education program, using the various aids in this broad field, such as pamphlets and other printed materials, posters, audiovisual aids, and discussion groups at all levels.

Of the approximately 15,000 persons eligible for service, 9,389 had availed themselves of this service at least once during 1952. This is a utilization rate of 68 per cent. There were 4,590 eligible families, averaging almost three to the family. One of the criticisms leveled against the Labor Health Institute Medical Care Plan is the failure of utilization, since one-third of the members do not avail themselves of the service. There are various factors which account for the failure of utilization. Even though a concentrated attempt has been made to acquaint the membership with the services available, there is a lag in this educational effort, although gradually more and more of the members are being reached. Certain members, of course, prefer to continue under the care of their family physician and dentist. The chief effort directed toward the members must continue to be at the educational level, so that an informed membership may be developed.

Several statistical tables are appended to this paper. Some of the pertinent conclusions that might be derived from these tables are:

Approximately 20 per cent of all LHI visits were for dental care.

Dental care required the equivalent

Table 1—Per cent of Visits Dentistry, Dentistry Cost per Eligible Individual, Cost per Dental Visit, 1951 and 1952

	1951	1952
A. Per cent of Visits Dentistry		
Total LHI visits	103,956	98,709
Total dentistry visits	18,846	18,966
Per cent of LHI visits dentistry	18	19
B. Dentistry Cost per Eligible Individual		
Total dentistry cost	$119,065	$129,299
Average eligible individuals	13,785	13,770
Total cost per eligible individual	8.64	9.39
LHI cost per eligible individual	7.29	8.01
Patient cost per eligible individual	1.35	1.38
C. Cost per Dental Visit		
Average dental visit total cost	$ 6.32	$ 6.82
Average paid by LHI per visit	5.33	5.81
Average paid by patient per visit	0.99	1.01

Table 2—Dentist Patient Visits and Dentist Hours, April, 1946–December, 1952

	Apr.–Dec., 1946	1947	1948	1949	1950	1951	1952	7-Year Total or Average
Patient Visits								
Medical center	2,113	4,407	8,708	10,322	12,405	18,784	17,649	
							1,244*	75,532
Home	..	..	3	..	..	8	8	19
Office	44	18	9	5	44	41	64	225
Hospital	..	..	3	..	..	13	1	17
Total Patient Visits	2,157	4,425	8,723	10,327	12,449	18,846	18,966	75,893
Average Eligible Individuals	2,650	4,928	5,236	5,855	9,058	13,785	13,770	7,897
Visits Eligible Individual	0.81†	0.90	1.67	1.76	1.37	1.37	1.38	1.39‡
Dentist Hours								
Medical center	806	2,136	3,321	4,969	6,357	9,587	9,773	36,949
Patient	§	§	3,206	3,901	5,488	8,490	8,392	
Nonpatient	§	§	115	1,068	869	1,097	1,381	
Home (1 hour/visit)	..	..	3	..	..	8	8	19
Office (½ hour/visit)	22	9	4½	2½	22	20½	32	112½
Hospital	..	..	1½	..	..	6	½	8
Total Dentist Hours	828	2,145	3,330	4,971½	6,379	9,621½	9,813½	37,088½
Equivalent Full-time Dentists**	0.40	1.03	1.60	2.39	3.07	4.63	4.72	17.56‡
Eligible Individuals per Full-time Dentist	6,625	4,784	3,273	2,450	2,950	2,977	2,917	3,073‡
Medical Center Dentist Visits per Medical Center Patient Hour	..	..	2.72	2.65	2.26	2.21	2.10	..

* Dental x-ray nurse visits

† If dentistry had been available during the entire 12 months of 1946 instead of during only 9 months of the year, it is estimated that visits per eligible person would have been 1.09

‡ Prorated to a 12-month year of service in 1946

** Full time is defined as 2,080 hours a year

§ No comparable data available

services of nearly five full-time dentists, or one dentist per 3,000 eligible individuals. Ten part-time dentists provided this care. Their annual compensation if full-time, would have amounted to $10,300.

The dental man hours per participant was in 1952, 0.7; the dental man hours per dental patient per year was 1.0; the dental visits per eligible participant was 1.38, and the total dental visits per dental patient was 2.02. These figures were based on 9,814 dentist hours.

The total cost of the dental department in 1952 was $129,299. Of this sum, $110,286 was paid by LHI and $19,013 was paid by the participant for outside laboratory fees. The cost per dental participant per year was $9.39 but the cost per dental patient per year was $13.77, which makes the cost per prepayment family per month of $2.35.

Table 3—Dental Services at the Medical Center, April, 1946–December, 1952

Service	Apr.–Dec., 1946	1947	1948	1949	1950	1951	1952	Total
Examinations					759	1,029	1,535	
Extractions	588	855	1,359	2,174	3,342	5,345	4,941	18,604
Fillings	464	1,140	2,287	2,716	3,662	5,652	7,883	23,804
X-ray plates taken	573	603	7,483	9,759	17,613	26,775	18,513	81,319
Prophylaxis	285	1,040	1,706	2,108	2,691	3,233	3,055	14,118
Surgery	*	*	*	*	120	221	299	
Dentures received	170	128	244	351	391	778	758	2,820

* Comparable data not available

Table 4—Cost of Dentistry Program, April, 1946–December, 1952

	Apr.–Dec., 1946	1947	1948	1949	1950	1951		1952	
Equipment									
Book Value as of December 31	$2,401	$4,314	$5,450	$ 8,326	$11,985	$ 17,436		$ 17,436	
Depreciation reserve as of December 31	85	232	545	1,558	2,338	4,213		6,133	
							Per cent		Per cent
Equipment, Annual Depreciation	$ 85	$ 147	$ 332	$ 1,013	$ 780	$ 1,874	2	$ 1,920	1
Dental Supplies	1,304	2,302	5,808	10,574	15,288	28,614	24	24,819	19
Dentist Fees	3,085	9,201	16,597	22,612	29,370	42,796		48,574	
Social Security and Unemployment Insurance						1,079	37	527	38
Dental Assistants	1,638	1,799	†	†	†	14,629	12	17,687	14
General Medical and Business Administration *	†	†	†	†	†	30,073	25	35,772	28
Total Dentistry Cost						$119,065	100	$129,299	100
Total Paid by LHI						100,464	84	110,286	85
Total Paid by Patient	$4,053	$6,386	$8,496	$12,233	$14,204	$ 18,601	16	$ 19,013	15

* Estimate made by proportioning total cost of medical director, medical records, and business office minus medical equipment depreciation, according to the proportion dentistry visits are to total LHI visits, plus one-third of total receptionist cost

† Comparable data not available

The problem of dental care in a group of 15,000 persons, representing the membership of one trade union and their dependents, which would reflect a cross-section of the population of most American communities, has been presented. Even though there has been much said and written that prepayment comprehensive dental care cannot be supplied to such segments of the population, this experience would seem to demonstrate that such service is not only possible and practical but highly desirable, since one cannot and should not fragment the patient in a comprehensive medical care program. We, as physicians and dentists, have the high responsibility and privilege, not only from a clinical but from a social and economic viewpoint, of developing the means and the mechanics for seeing that medical care is available to all the people. Good medical care means good dental care; the two cannot be divorced from each other. The medical care program of LHI demonstrates that the whole program can be made a practical reality.

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Views of the National Congress of Parents and Teachers in Regard to Fluoridation

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What the people want they get: making them feel a real need is the difficulty; when it is a matter of their children's well-being parents respond as they will to no other stimulus. Mix these chemical ingredients together—and the explosive compound will be known by the symbol PTA.

✢ The greatest advances in medicine have been made by the prevention and not by the cure of disease. When we stop to consider that practically complete eradication of typhoid fever has come about by the addition of a simple chemical compound, chlorine, to the water supply; that the addition of iodides to common table salt has prevented goiter in adolescents in many areas; and that in 26 of our states it is legally required that wheat flour, corn meal, and white bread contain the three vitamins, nicotinic acid, riboflavin, and thiamine, as well as iron, according to a standard formula, in order to prevent nutritional disease; and that all this has occurred in the last 50 years, one visualizes what tremendous results have been achieved by the public health measures of prevention.

In pediatrics the two great unsolved problems that have faced the pediatrician for many years have been the common cold and dental caries. The common cold is still an enigma. With the prevention of dental caries we are making progress. I have lived in my medical lifetime through the stage of toothbrush drills with its slogan "A clean tooth does not decay," the filling of all pits and fissures to eliminate the starting area of decay, and the dietary prevention of caries, and have seen that all these efforts have yielded practically no reduction in dental caries—which today still exists in from 95 per cent to 99 per cent of our children.

At last with the help of nature, the first important step in the prevention of dental caries was taken when it was discovered that mottled enamel of the teeth and markedly reduced dental caries occurred in areas in which the fluorides of the water were present in amounts in excess of 1 ppm. Based on nature's experiments in water supplies of various concentration from 0 to 27 ppm of fluorides, it became evident that with a concentration of 1 ppm of fluorides in water there was practically no discoloration of the enamel and a very decided beneficial effect on caries. Applied in scientific studies in a number of American cities, it has been proved beyond any doubt that about 1 part in a million of fluoride added to water supplies will reduce dental caries, without any other measure, by from 50 per cent to 65 per cent.

In not a single instance in which fluorides have been added to a water supply has it failed to reduce caries, and in not a single controlled study have any untoward effects been produced in the population, young or old. When for 19 years an entire community can drink water containing 13.7 ppm of fluorides without showing any disturbance in their physical health but severe mottling of their teeth, then it is sheer nonsense

to talk about the poisonous effect of 1 part in a million of fluoride in drinking water to anyone.

The Parent-Teacher Association recognizes the fundamental nature of physical health to the happiness and well-being of the child in his development to responsible citizenship. The attitude of the PTA is well expressed by Dr. Howard McCluskey in his paper, What We Want for Our Children: "Obviously we all want health for our boys and girls for without sound health all else quickly comes to naught."

The PTA is a group of nearly 8,000,000 individuals, the mothers, fathers, and teachers of the group that will reap the greatest benefit from fluoridation. It is a group that is organized to swing its support to any measure that will improve the health, education, or welfare of our children.

The association, as a whole, accepts the fundamental proof given by clinical and research workers, as well as by nature, that the fluoridation of communal water supplies is harmless to the community and that it is a means by which dental caries in children can be reduced by from 50 per cent to 65 per cent. The beneficial effects of fluoridation carry over into adult life in practically the same proportions. When the cost of dental work, as was shown in a Wisconsin study, is $145 more per child for the first 16 years of his life in a community without fluoride in the water, than in a community with 1.2 ppm, the program of fluoridation is seen to have an important economic angle, in addition to its even more important health angle.

The PTA, as an organization, is in no position to contribute to the proof of the value of fluoridation in preventing caries; so it must rely on the work of those in the fields of dentistry, public health, and medicine which has furnished us with the proof of the value and harmlessness of fluoridation. In the past, these three groups have been protectors of our health and are responsible for the achievements of the past 50 years, just as they are actively working today to improve still further the health of the community.

This is the group—dentist, physician, and public health worker—which has given us the background and the necessary evidence that the PTA must have before it can use its prestige and influence as a lay organization to help make available to the public those procedures which this group recommends as useful in preserving the health of the community. With the approval of fluoridation by practically all of the important national organizations whose members by their work in the field have earned the right to an opinion, the PTA felt justified in actively engaging during the past year in support of fluoridation of communal water supplies.

At its semiannual meeting last fall the National Board of Managers passed the following resolution:

> After a full study of the evidence presented by the U. S. Public Health Service and the American Dental Association that the fluoridation of communal water supplies to the extent of 1 part per million is in no way harmful to the health of the community and has been shown to reduce dental caries in children to one half in all areas in which it has been tried, the National Congress of Parents and Teachers feels justified in urging its local parents and teachers groups to interest themselves in making this health measure available to children in their community.

At the same meeting a number of state presidents stated that they were already active in the fluoridation campaign and were gratified that they now

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Dr. Helmholz is national chairman of health, National Congress of Parents and Teachers, and is on the Emeritus Staff, Mayo Clinic, Rochester, Minn. This paper was presented before the American School Health Association and the Dental Health, Public Health Education, and School Health Sections of the American Public Health Association, at the Eighty-first Annual Meeting in New York, N. Y., November 12, 1953.

had the backing of the national organization.

In the December issue of the PTA magazine an article appeared by the national health chairman explaining to the membership the value of fluoridation to our children in preserving their teeth, the harmlessness of the procedure to all in the community, and answering seven of the most frequent objections that have been raised to fluoridation. At about the same time an explanatory letter was sent out to all the state health chairmen and with it a copy of the previously mentioned article, "The Facts About Fluoridated Water and Tooth Decay," and a number of pamphlets of the American Dental Association on fluoridation. The response of the state organizations was splendid. In the first three months of 1953 there was an article, editorial, or abstract on fluoridation in practically every state PTA magazine or bulletin. The state health chairman passed on to the local PTA presidents and health chairmen a detailed account of the order of procedures which were necessary for a successful campaign. The letter sent out by the Mississippi health chairman was particularly detailed and effective in the importance of the follow-through in the campaign. Emphasis was given to the importance of the dental, public health and medical leadership in the campaign, and the backing up of the leaders by the PTA and all other community organizations.

The fluoridation of a communal water supply is not a federal or state issue, but is an issue that must be settled by each community. It is, therefore, necessary for the PTA to work in all its local units with communal water supplies by taking an active interest and participating in a campaign which has first been approved and sponsored by the dental profession and public health officers. The PTA with its great interest in the health of children and its large membership is in a position to successfully influence public opinion. Only when we have an informed public that knows the fundamental facts regarding fluoridation will it be impossible for a small group or even a single individual to lead astray a community by making demonstrably false statements, as for instance that fluorides in a concentration of one part to a million in water are poisonous to man because fluorine is used as a rat poison.

Almost without exception the members of the PTA have accepted the recommendation of the dental, medical, and public health organizations and are actively at work furthering the fluoridation of communal water supplies. Milwaukee is a good example of what an alert PTA can accomplish to overcome opposition to fluoridation, worthy as an example of citation in some detail.

As the result of the Milwaukee aldermen's failure to pass a fluoridation dental health ordinance, the PTA in October of 1952 decided to circulate a petition requesting immediate fluoridation of the Milwaukee water supply. A petition with 2,216 signatures was presented to the aldermen of the City Health Committee and other interested members of the council. As a result a simple referendum resolution, "Do You Favor Fluoridating the Milwaukee Water Supply," was approved by the aldermen and was to be voted on at the April election. Immediately following this decision by the aldermen, the PTA began an all-out informative campaign. A citizens' committee was formed in which the PTA played an important role; the chairman of the Speaker's Bureau was the chairman of the Milwaukee PTA Council. The PTA members wrote for information to Washington, Boise, Grand Rapids, Marshall (Texas), and Madison for their local experiences with fluoridation. This detailed information was used in PTA

meetings, addresses, radio talks, and much of it used in newspaper articles. All city organizations were called upon and speakers furnished through the bureau. By personal visits and by letters the mayor and aldermen were reached. Material was furnished to the local newspapers and excellent support was given to the campaign by one paper. The individuals outstanding in the campaign received many letters and telephone calls from the opposition flavored with emotion and not with facts. About two weeks before the April election 250 people, probably two-thirds of them PTA members, turned out to address leaflets for mailing. The Red Cross was also very helpful in this campaign. Many of the PTA meetings in March scheduled fluoridation in their program.

As a result of this intensive educational campaign the voters of Milwaukee by a majority of three to two voted in favor of fluoridation. Even after passage of the referendum resolution there were delaying tactics employed by the opposition, and the PTA continued to work with aldermen who had not abided by the vote until fluoridation was finally put into effect in July, 1953. All in all, it was a splendid example of what an organized effort on the part of a group like PTA can accomplish by wise leadership and determined effort.

Many other instances could be cited of effective leadership on the part of local PTA groups that are ever ready to undertake any campaign which they feel will improve the health and welfare of children. At a time when our annual crop of babies has increased to a total of four million, it is more important than ever that any health measure that is so sure of results as is fluoridation, should be made immediately available to all children possible.

Better homes, better schools, and better communities are the PTA goals for the next year. As the health slogan for better communities I would suggest: "For Every Child Fluoridated Water to Drink."

Brochure on Dental Health Policies

The American Dental Association has compiled the actions of its House of Delegates on health education, dental treatment, preventive dentistry, and dental research in a brochure, "Official Policies of the ADA on Dental Health Programs." The association believes that experience has demonstrated that these basic principles "will be useful in the development of better local community programs for dental health." It suggests that local dental societies and dentists concern themselves actively "with the development and maintenance of full-time, official public health departments" and with leadership and support of community and state health councils.

The statement of Principles Relating to State and Local Community Planning for Health is the statement of principles adopted by the Interagency Committee on Health and released for publication in 1951. Besides the ADA, the six members of the Interagency Committee are the American Hospital Association, the American Medical Association, the American Nurses Association, the American Public Health Association, and the American Public Welfare Association.

The brochure was mailed to ADA members with the April News Letter of the Council on Dental Health. No information as to other distribution. 222 E. Superior St., Chicago 11.

The Engineer Looks at Fluoridation

DWIGHT F. METZLER, F.A.P.H.A.

Engineers should assume the lead in pressing for water fluoridation—their leadership in matters of water supply is taken for granted; they are familiar with all the technical problems involved; they are experienced in dealing with city fathers; they have helped to put over bond issues; and they have practical knowledge of ways to gain popular support.

✣ Probably no other epidemiological problem has been so completely studied, has been written about so extensively, or has received so much public attention as the control of dental caries by fluoridation of water supplies. Fluoridation has proved its worth, and its beneficial effects are recognized. It is generally accepted by individual scientists and by groups of dental and medical experts that fluoridation has no harmful physiological effect in the amounts necessary to control dental caries. Fluoridation is an accepted practice. One-third of the users of municipal water supplies in the United States, 33,400,000 persons, are now served fluoridated water or their communities have voted to install fluoridation equipment and are waiting upon its delivery. Every fluoridation installation has been a success—of the 833 installations there has not been a single mechanical failure.

The role of fluorides in preventing decay has been under discussion for more than 15 years. In 1938 the Dental and Sanitation Divisions of the Kansas State Board of Health commented on the absence of dental decay in Wallace County, Kans., where the average fluoride content of ground water was 1.2 parts per million. They stated "Comparable excellence of the children's teeth in this county adds another bit of evidence in support of the idea that, although fluoride-bearing water caused mottling of the enamel, it also seems to make normally formed teeth more resistant to decay." [1]

The water supplies of Kansas have provided an ideal testing laboratory for measuring the effects of various amounts of fluoride on decay rates. Since the water varies from 0.1 to 0.3 ppm in the eastern part of the state to near optimum values in counties in the western part of the state, many persons have been using waters with desirable fluoride values all their lives. Studies by the Dental Hygiene Division have shown that they obtain tooth protection and physicians have observed no harmful effects from continued drinking of the water.

Similar evidence has been gathered recently in Missouri. A study was made of the dental caries rate in nine cities because of extensive resistance to fluoridation by waterworks superintendents and operators in the state. Investigators found that three to four times as many teeth were decayed in the low-fluoride cities as in those with optimum amounts of fluorides. This study is of special interest since it served as a basis for reversing the fluoridation policy of the Missouri Division of Health. It is also worth noting since several other states where fluoridation has not advanced rapidly are considering similar studies to decide whether or not their state health departments should promote fluoridation aggressively. At first glance this seems to be an unnecessary expenditure of energy since the facts supporting

fluoridation are already overwhelming; however, it may be of value if used as an educational tool to win support for fluoridation projects.

There is a parallel between the fluoridation of water supplies and earlier sanitary practices for reducing intestinal disease rates. In fact, chlorination was opposed just as determinedly and many of the same arguments were used 40–50 years ago as are being used today against fluoridation. Even such an authority in water treatment as George C. Whipple stated in 1906, "The idea of adding poisonous chemicals (referring to alum, lime, chlorine, and iron salts) to the water for the purpose of improving its quality for drinking purposes has generally been considered as illogical and unsafe . . . ." [2] But, he goes on to add, "An indiscriminate condemnation of the use of chemicals, however, would be unjust." Today, all of these chemicals are generally accepted and widely used in water purification.

The waterworks superintendent has had a relatively wide latitude in choosing the chemicals used for water treatment, as well as a choice of what to add or subtract from the water. Joint standards of chemical and bacterial quality have been established by the Public Health Service and the American Water Works Association which give maximum permissible limits for certain chemical elements. Elements and compounds are added which were not present in the original supply. Aluminum and iron salts, some of which remain in the finished water, are used for coagulation. Chlorine, chlorine compounds, and ozone have all been added as disinfecting agents. Corrosion in pipes and water systems, which might be compared to dental decay, is controlled by adding calcium, the glassy phosphates, or silicates. In zeolite-treated waters the sodium content of the finished product may be increased several times. These additions have been made largely on the initiative of water works management in the interests of purification, softening, or corrosion control—in other words to provide a water of acceptable quality for the public.

However, waterworks administrators have been more cautious about adding fluorides. They have been guided by a policy expressed as, "In communities where a strong public demand has developed and the procedure has the full approval of the local medical and dental societies, the local and state health authorities and others responsible for the communal health, water departments or companies may properly participate in a program of fluoridation of public water supplies." This policy of the American Water Works Association has been a sound one for waterworks administrators, for it recognizes fluoridation as a local public health matter. However, health department engineers should take a stand urging fluoridation as one of the great steps forward in health practice of this generation.

Fluoridation is a success. We have had nearly nine years of fluoridation experience and the record of not a single failure. Feed equipment has been developed which feeds exactly the quantities of fluoride needed. Careful laboratory and administrative controls have been developed. Tests for fluorides have been refined and simplified so that fluoridation can be accurately controlled, even by part-time water superintendents in small towns. Since fluoridation has been accepted and has proved to be a safe, desirable, public health measure, engineers should take

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Mr. Metzler is chief engineer, Kansas State Board of Health, Lawrence, Kans. This paper was presented before a Joint Session of the American School Health Association and the Dental Health, Public Health Education, and School Health Sections of the American Public Health Association at the Eighty-first Annual Meeting in New York, N. Y., November 12, 1953.

the lead in promoting its adoption. The engineer is well equipped for this task. His leadership in matters affecting water supply is acknowledged. He is familiar with the technical problems involved and has had long experience in controlling the dosage of chemicals used in water purification. Further, he is experienced in dealing with city officials. He has promoted bond issues and has at least a working knowledge of ways to obtain community support.

Local waterworks officials look to their state health department engineers for leadership. In most states annual schools are held—the first such school was held in Kansas in the spring of 1921—to train waterworks operators and assist them in keeping abreast of the latest advances. Through these schools, at district waterworks meetings, and by active participation in affairs of the state waterworks group, engineers in the state department of health exert a great influence over the policies and practices of public water supplies in the state. Furthermore, state health department engineers are visiting water plants daily, are preparing reports of their findings, and are meeting with city officials regularly. All of these functions offer opportunities to point out the advantages of fluoridation and to provide the local waterworks officials with information about it.

There is little reason to think that fluoridation of public water supplies should not be recommended and promoted on the same basis as the other sanitation programs, such as stream pollution abatement. Kansas has been reasonably successful in carrying out a stream pollution abatement program. The beginning of the program consisted of establishing facts—making stream pollution surveys to determine the degree of pollution and the types of pollution which were most serious. Following each survey a report was prepared in which the data were analyzed and conclusions drawn. The report was presented to city officials and other interested citizens and public hearings were held.

The hearings have been a valuable tool in enabling us to take advantage of aroused public opinion, even though Kansas water pollution statutes give the State Board of Health ample authority to develop a program and eliminate pollution without the hearings. Following the hearings policies have been adopted based upon the factual data, the requirements of the law, and the opinions of persons who testified at the hearings. Bond issues have been promoted primarily by local citizens and officials, with the State Board of Health supplying general information and facts concerning the specific need.

The same technics can be used in advancing fluoridation. Waterworks engineers, and particularly those working with health departments, should study the individual needs in each community. Records are already available to show where fluoride adjustment of the water is needed. This need should be pointed out in a report to each city official. The reports can be followed by a meeting of the engineers with the officials to provide them with further information about fluoridation, if they are interested. Some cities have held open forums on the matter. These are desirable if sufficient planning has been done prior to the meetings. While encouragement of local discussion groups, the viewing of films, and other study activities are not the sole responsibility of the engineer, he should be familiar with the study aids which are available.

On the basis of our experience in water pollution control programs, we see a need for an inexpensive booklet dealing with fluoridation in each state. While such booklets as "Securing Community Acceptance for Fluoridation" of the American Dental Association are excellent, they could profitably be sup-

plemented with a booklet dealing exclusively with the situation in each state. The cost of such a booklet is low and could be met by existing budgets of most state health departments, although some states may not have the staff writer and artist services to prepare the manuscript and illustrations. Comparing this project again with water pollution control, the Public Health Service has made available to several states an experienced writer to prepare a bulletin or pamphlet on pollution control. The value of these has been proved in marshalling support for bond issues. The Dental Hygiene Division of the Public Health Service could provide the same service at comparably small cost. We should recognize that each booklet will be different and the writer should be permitted sufficient time in each state to become familiar with the local problems and attitudes.

The acceptance of fluoridation would be further hastened if equipment and chemical companies, in addition to advertising in the technical journals, would purchase advertising space to tell the fluoridation story in popular magazines. Similar advertising pointing out the need for protecting water against pollution has caused many favorable comments.

Conclusion

The merits of fluoridation have been established. Engineers concerned with water treatment and distribution should encourage and promote the adjustment of fluoride-deficient water. Methods which have been used successfully in advancing other sanitation programs can be used to advantage in speeding the adoption of fluoridation.

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1. Findings in Surveys on Vincents' Infection and Mottled Enamel in Kansas. Survey Conducted by Kansas State Board of Health, Bureau of Public Relations, Division of Dental Hygiene. J. Am. Dent. A. 25:303-304 (Feb.), 1938.
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Shattuck Award to Dr. Hiscock

Ira Vaughan Hiscock, D.Sc., chairman and Lauder professor of public health, Yale University, has received the 1954 Lemuel Shattuck Award of the Massachusetts Public Health Association for outstanding leadership in public health. Dr. Hiscock's citation reads in part:

"Although you have excelled as a sanitarian, bacteriologist, teacher, writer, consultant, health educator, and community surveyor, your ability to deal with the whole rather than with only a limited part is especially noteworthy. During a period of great emphasis on specialization, you have shown outstanding competence as a generalist. Although each specialty would like to claim you for its own, health administration—the practical application of many specialities—has enabled you to apply the broad principles which Shattuck laid down over one hundred years ago to the health problems of today."

The Shattuck Award was established in 1950 as a feature of the 60th anniversary of the Massachusetts association. Its first winner was Professor C.-E. A. Winslow. In subsequent years recipients of the award have been Henry Dexter Chadwick, M.D., Curtis M. Hilliard, and Charles F. Wilinsky, M.D.

How Fluoridation Facts Were Presented to the Citizens of Baltimore, Md.

H. BERTON McCAULEY, D.D.S.

Though it is the prerogative of leaders to lead intrepidly, they are wise to set a cautious pace that allows the rank and file to keep up with them; otherwise there may be no parade. This hackneyed observation is given new meaning by the success story that follows.

✣ On November 26, 1952, the people of Baltimore, Md., inaugurated a program of water fluoridation which they believe will eliminate from the next generation of Baltimoreans a substantial portion of the tooth decay which is their current misfortune. On this occasion, Mayor Thomas D'Alesandro [1] summarized the public interest in the program as follows:

What we do here today may well be termed by future generations one of the most important events in the history of our city.

By adding fluorine to our water, an advance strongly recommended both by the dental and medical professions, we begin today to benefit thousands of young children, and in the future hundreds of thousands of boys and girls will be benefited.

Exhaustive tests by the United States Public Health Service have demonstrated conclusively that fluoridation of the drinking water supply will reduce dental decay up to 60 per cent.

Thinking in terms of toothaches alone the benefits to children will be enormous. And fluoridation will have a very beneficial effect on the financial headaches of parents.

Our medical and dental authorities tell us that the addition of fluorine to the drinking water has the direct result of strengthening the enamel which coats our teeth. It is as simple as that.

Yet this greatly desired result is attained without any harmful effect on the body.

Proof of this has been demonstrated again and again in communities which have fluorine in their water naturally and in quantities much larger than we shall add. As a matter of fact, there are several such communities right here in Maryland. . . .

There was a little opposition—misguided opposition—to fluorine. But the overwhelming majority of our people, the parents of Baltimore who think of the well-being of their children, is solidly behind fluorine.

The support of the people and the powerful support of the medical and dental professions have made this day possible.

I believe with all my heart that in the fluoridation of our water we have something wonderful to be thankful for, in addition to all the other blessings we enjoy as American citizens.

Public Education Took Two Years

Two years of educational effort were required to make fluoridation of the water supply of Baltimore City possible. This effort began November 3, 1950, with the appearance in the newspapers of an account of the activities of the American Dental Association, at that time convened in Atlantic City. The dentists were pondering a resolution "urging addition of sodium fluoride to drinking water to help fight tooth decay."

The resolution was adopted. Immediately, Dr. Huntington Williams, the commissioner of health of Baltimore City, was requested by the mayor, and shortly later by resolution of the City Council, to study the possible addition of a fluorine compound to the municipal water supply. In response a report from the Bureau of Dental Care was submitted promptly.

The Mayor Gets the Facts

The bureau's report to the mayor was noted in Baltimore newspapers on November 14. Quoting the Sun:

City Weighs Dental Remedy in Water

A study of results in other cities where the water is so treated indicates that tooth decay would be reduced about 50 per cent among those who drank the treated water the first eight years of their life. . . . Maximum benefits would follow such use of the fluoridated water during early life but there would also be retardation of decay for those who began its use later in life. . . . Sodium fluoride (is) one of the chemicals suitable for the treatment. . . . Treatment cost would be about $55,000 a year. . . . (The) decrease in tooth decay under the plan within about five years would begin to show results in better teeth among children and a drop in the cost of the dental care program. . . . Reduction of decay would be reflected in greatly improved teeth, health and appearance for tomorrow's citizens and a very substantial decrease in the presently staggering total of our population's unmet dental needs. . . .

On the basis of the report, the mayor asked the budget director whether the sum needed for starting the fluoridation plan in 1951 could be provided without unbalancing the budget for that year, which had just been prepared and sent to the City Council.

Two days later, November 16, the Sun carried another article, "City to Treat Water to Cut Tooth Decay." This item reiterated much of the information published previously and added:

Although the fluorine program has its maximum effect on children who drink the treated water, tests in other cities indicate the benefits extend through adult life. . . . Fluoridation does not alter the appearance or taste of the water or render it capable of any known harm. . . . Enough evidence is available for Baltimore to go ahead. . . . If the city adopts a policy of watchful waiting, it will have lost the benefits of the program in the interim period. . . . The loss in tooth protection among youngsters cannot be made up through subsequent water treatment. . . .

The budget director concluded that the money was available.

The Press Gets the Facts

By the middle of November, 1950, public interest in fluoridation had reached such a level that the Health Department began to receive inquiries directly from the press. Here was an opportunity to expand and clarify the material in the report to the mayor in order to call attention to many additional pertinent facts:

Fluorine added to Baltimore's water supply will reach the teeth via the blood stream. . . . Once there it will cut decay 50 to 60 per cent. . . . How fluorine works is not precisely known. . . . 'It's like electricity. All we know is that it does the work. . . .' Two thories are advanced. . . . One that it interferes with the activity of enzymes which indirectly break down tooth enamel. . . . The other that it hardens the teeth, making them less soluble to acids formed from sweets and similar foods.

A child whose teeth are nearly formed when fluoride is added to the water supply will receive some help, but babies born under the influence of fluoridated water will receive the greatest benefit. . . . After eight or ten years of age there is little to be gained by exposure to fluoride-bearing water. . . . Adults not exposed to a fluoride water in early life are a lost cause. . . . Trying to help adults prevent tooth decay is like locking the barn door after the horse is stolen. . . .

Fluorine by itself is a gas. It is added to water supplies in a compound, sodium fluoride, sodium silico-fluoride or hydrofluosilicic acid, which bear the same relationship to fluorine that table salt, sodium chloride, bears to chlorine. . . . If too much fluorine, more than 1.5 parts in a million parts of water, is present in the water, the enamel of teeth formed under its influence in some children may be mottled enough to be noticeable. . . . However, there is no danger of mottled enamel from adding fluorine up to the 1.5 p.p.m. level. . . .

No opportunity was lost to remind people that fluoridation is a proved

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Dr. McCauley is director, Bureau of Dental Care, City Health Department, Baltimore, Md. This paper was presented before the American School Health Association and the Dental Health, Public Health Education, and School Health Sections of the American Public Health Association at the Eighty-first Annual Meeting in New York, N. Y., November 12, 1953.

procedure. Pilot programs of many years duration in Grand Rapids, Mich., Newburgh, N. Y., Brantford, Ont., Marshall, Tex., Sheboygan, Wis., and Evanston, Ill., had amply demonstrated its effectiveness, and the experience of populations living in fluoride water areas, its safety. The Public Health Service, in an Associated Press dispatch dated October 27, 1950, said: "today it has definitely been shown that sodium fluoride added to the public water supply will 'substantially reduce' dental decay in children." In the final analysis, fluoridation is no more or less than the duplication of a condition in nature favorable to dental health. At present, more than 15 million people in about 800 communities are receiving fluoridated water.

During the last two months of 1950, the Baltimore papers carried numerous news items, editorials, and letters to the editor on the proposed fluoridation of the city's water supply. Most of them were favorable; some expressed caution; a very few were frankly opposed. Perhaps most influential were accounts of favorable actions by the Baltimore City Dental Society, the Medical and Chirurgical Faculty of Maryland, the dean and faculty of the University of Maryland's Baltimore College of Dental Surgery, and the Maryland State Board of Health. People were warned that fluoridation is not "the magic wand that completely prevents tooth decay." At the same time its safety was established in the public mind with statements like these by Dr. J. Ben Robinson, dean, and Dr. Myron S. Aisenberg, professor of pathology of the dental school:

> With the one part in a million ratio planned here it would take 1,000 gallons of water—at one time—to be lethal. . . . The amount of fluorine which remains in the system is not cumulative to the extent of 4 grams (the lethal dose). . . . Animals and fish, dogs, cats and goldfish, even rats and mice, suffer no ill effects. . . . Studies of the use of the chemical in test cities over a period of years (yield) no evidence of any harmful effects on bone structure, eyesight, or other bodily development. . . . A test in New York State has shown a (significant) reduction in decay in a fluorine city. . . . The results should be even better as more time passes. . . .

It is interesting to note that on November 27 the City Council conducted a hearing on the fluoridation proposal "because of report of opposition," but according to the Sun: "no one appeared to oppose the use of the chemical in the water supply."

The City Waits to See

On June 29, 1951, while the Bureau of Water Supply and the Health Department continued to study fluoridation as a practical procedure, the Baltimore papers published the content of a letter received by the mayor from the Surgeon General of the Public Health Service, Dr. Leonard A. Scheele: "It is my view that the City of Baltimore can no longer afford to postpone fluoridation of the drinking water supply." He noted that fluoridation was approved by the American Dental Association, the American Public Health Association, the American Water Works Association, the Association of State and Territorial Dental Health Directors, the American Association of Public Health Dentists, and the Association of State and Territorial Health Officers.

However, caution was the order of the day. The commissioner of health indicated to the mayor, and it appeared in the Sun on June 29, that:

> While in general the reports of experience in other communities are favorable. . . . Baltimore should not take this step in the immediate future. . . . (T)here remains some considerable doubt in the minds of leading medical and sanitary authorities on the question of possible toxicity of a cumulative nature for adults.

It was decided to await the report of a National Research Council ad hoc

Committee on Fluoridation of Water Supplies, which among its 10 members included the professors of medicine, epidemiology, and sanitary engineering of the Johns Hopkins University. In an editorial June 30, the Sun paved the way to public acceptance of the forthcoming report by this statement:

> If (the) committee approves fluoridation, the Mayor will have firmer reason to get on with his plan for Baltimore. If the committee finds evidence that fluorine is harmful, the Mayor will have reason to thank Dr. Williams for advocating a wait-and-see policy.

The Dental School Is Heard

On July 6, the Sun made public a letter to the mayor by Dr. Robinson who urged prompt fluoridation of the water supply and reiterated the safety and benefits of the plan. From a previous report of the director of the Bureau of Dental Care it was noted that:

> Several hundred thousand people spend their entire lives in areas where the chemical is naturally present in the water. . . . Certainly if low fluorine is toxic, it would during the last 100 years have been made known in the course of routine medical observation of these people. . . .
>
> Of the 3,400,000 teeth (in Baltimore) which should be filled, dentists are able to fill only 500,000 each year and of 1,800,000 which should be extracted, only 300,000 are pulled. . . . The cost of adding fluorine has been estimated at $80,000 a year, $2,000,000 in 25 years. . . . But Baltimoreans are now spending $2,000,000 a year for their inadequate care—for 500,000 fillings and 300,000 extractions. . . . The present unmet need to fill 2,900,000 teeth can be reduced with fluoridation to 1,200,000 and the unmet need to pull 1,500,000 teeth can be reduced to 300,000. . . .
>
> Fluoridated water cannot be expected to bring about a repair of damage already accomplished by decay. . . . People continuously residing in fluoride water areas not only have two-thirds less tooth decay but they lose their teeth at a considerable slower rate than people in fluoride-free sections. . . .

NRC Reports Fluoridation Safe

On November 29, 1951, a special dispatch appeared in the Evening Sun:

> Fluoridation of public drinking water to reduce tooth decay as called for by a $90,000 plan in Baltimore is safe and practicable, according to a report by a special committee of the National Research Council.

An editorial follow-up stated further:

> The committee reports that children in communities where there are small amounts (one part per million) of a fluoride in the drinking water have from one-third to one-half as much tooth decay as children exposed to fluorine-free water. The increased resistance to decay, the committee found, carries into adult life to an 'appreciable degree.' The fluoride can be added to fluorine-free water supplies with the same beneficial effects, and, if handled wisely, should not have harmful effects on the human system.

Baltimore had been given the evidence it needed. On November 30, the commissioner of health transmitted the National Research Council report to the mayor with this comment:

> This report which is very satisfactory has just reached me during the past half hour, and I feel sure that now it will be well, on the basis of these findings, for Baltimore City to move forward with the plan you have sponsored so actively to take this important step.

The mayor announced the same day that authority of the State Board of Health had been requested for adding fluoride to the city water as a preventive of tooth decay.

The Opposition Is Heard

An important influence against the fluoridation plan in Baltimore appeared December 29, 1951, in a dispatch from Philadelphia under the headline "Fluorine Use Called 'Risk'." This voiced the opinion of Dr. Robert S. Harris of the Massachusetts Institute of Technology, who declared that because "much still is unknown about the long-time effects of small amounts taken every day" fluoridation is "a calculated risk."

The keynote of the opposition, sounded by Dr. Harris, was enlarged upon during the following months, and the fluoridation issue rendered thoroughly confusing to the public by the publicized activities of the Delaney Committee of the House of Representatives.[2]

On February 25, 1952, a resolution appeared in the City Council (No. 506):

WHEREAS, there is disagreement among scientists as to the effect of water fluoridation on ageing people;

WHEREAS, claims are made that fluoride is harmful to persons suffering from rheumatism and arthritis; now, therefore be it

RESOLVED by the City Council of Baltimore, That the Health Committee request the Commissioner of Health and the Water Engineer to give to it whatever information is available on this treatment by fluoridation of city water supplies.

The Opposition Gets the Facts

The commissioner of health and the water engineer appeared before the Health Committee of the City Council in an open hearing March 3, 1952, at which time the commissioner presented a prepared statement.[3] This and a second hearing on March 7 were attended primarily by women (about 80 in number) who vehemently attacked fluoridation with claims that the chemical was a rat poison and an insecticide and would cause "hardening of the bones" and "conceivably . . . injuries to the kidneys, stomach, thyroid gland and the brain." Fluoridation was declared "unconstitutional," "a fifth column," "social mass medication," and "pagan." Dentists were accused of interest in the chemical industry.

Drs. Williams and Aisenberg carried the debate for fluoridation. In addition to the statements of the commissioner, it was explained to the Health Committee and those present that fluorine fights acids in the mouth which cause dental decay. Although it makes enamel harder, it does not make bones harder or more brittle because the teeth take only what is needed from the water and the rest of the chemical is discharged by the kidneys without ill effect. Copies of the National Research Council report and "Fluoridation Questions and Answers," a Health Department information folder, were distributed to interested persons.

An attempt by opposition council members to make fluoridation the subject of a referendum was unsuccessful, and on March 10, a new resolution was introduced in the City Council (No. 533):

WHEREAS, there seems to be considerable uncertainty as to the wisdom of placing fluoride in the water supply; and

WHEREAS, it seems desirable that further study should be given to this important subject in order to determine whether such chemical will be harmful to certain adults; and

WHEREAS, while such fluoridation of water may be beneficial to young children, if the result is that adults are seriously harmed; . . .

RESOLVED by the City Council of Baltimore, That the Commissioner of Health and the Water Engineer of Baltimore City be and they are hereby requested to delay the fluoridation of the City's water supply until additional information has been secured in order to determine whether it is a wise step to take under all the circumstances; . . .

Consequently, on March 19, 1952, a third public hearing on fluoridation was conducted by the Health Committee. To it were invited any doctors or dentists who opposed the measure. None had appeared previously, and none appeared now. Instead the affirmative was confirmed by Dr. Francis A. Arnold, Jr., deputy director, and Dr. Isadore Zipkin, biochemist of the National Institute of Dental Research:

Thorough medical checks on adults who have lived for 20 years or more in a Texas town (Bartlett) with (8 ppm) fluorine in the water showed no bad effects. . . . Adults in Boulder (Colo.), which has no fluorine, lost three times as many teeth when they reached

35 and had four times the number of cavities as adults in Colorado Springs, which has natural fluorine. . . . Thorough medical tests show (that) 90 per cent of the chemical is thrown off by the body. . . . The chemical is not a health hazard and does not injure vital organs or bones. . . .

On hand, also, to endorse fluoridation were leaders of medicine and dentistry in the city and state: Dr. Robert H. Riley, the state director of health; Dr. Dean Roberts, his deputy; and Dr. A. McGhee Harvey, Johns Hopkins professor of medicine, who participated in the National Research Council study. The array of professional talent was impressive. Only a chiropracter spoke out against fluoridation. Four days later the City Council voted 17 to 4 to reject resolution 533. On March 26, an editorial commented:

> The contest has been decided and it turned out to be no contest. That being so, there is no legitimate reason to postpone the use of fluorine.

A Complaint Is Heard

The Baltimore Morning Sun for April 5, 1952, reported that the city was delaying fluoridation pending the delivery of storage tanks for the chemical. Meanwhile, two taxpayers, Ian Ross MacFarlane and Harry C. Hoffman, filed a complaint in court alleging that "introduction of fluorine into the water supply would be prejudicial to health, to religious rights and to other rights guaranteed by the constitution of the State of Maryland" and named the mayor, the City Council, the health commissioner, and the water engineer as defendents. Fluoridation was again the subject of debate.

On May 6, Dr. Harold C. Hodge, professor of pharmacology and toxicology of the University of Rochester, and Dr. Reidar F. Sognnaes, associate dean of the Harvard Dental School, addressed a meeting of the Maryland State Dental Association in Baltimore. They received favorable press coverage and answered pertinent questions: To what extent does the human body naturally obtain fluorine? Is there a reduction of acid in the mouths of users of fluorine? What effect has the use of fluoridated water on diseases of old age? The widespread prevalence of fluorine in natural foods and the toxicology of fluorine were cited as evidence precluding deleterious effects from a water supply fluoridated to the 1 ppm level. When fluoride was added to a cavity-producing sugar diet in experimental animals, the number of cavities dropped by three-fourths. There was "absolutely no scientific basis" to rumors that fluoride caused arthritis, rheumatism, high blood pressure, or other diseases. Both essayists stressed the need for fluoridation of water supplies.

The Court Gets the Facts

For two days, November 6 and 7, 1952, Judge Michael J. Manley of the Circuit Court of Baltimore City listened to testimony in the injunction suit brought to prevent the city from fluoridating the water supply. As in the case of the hearings conducted by the Health Committee of the City Council, recognized authorities from far and near were called upon to take the stand for fluoridation.* Only Mr. Hoffman, a Christian Scientist, testified against fluoridation. Mr. MacFarlane, the other complainant, failed to appear in the court room at any time during the proceedings.

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* Among them were Dr. Francis A. Arnold, Jr., and Dr. Isidore Zipkin of the Public Health Service; Dr. Alan M. Chesney, president of the Medical and Chirurgical Faculty of Maryland and dean of the Johns Hopkins School of Medicine; Dr. Maurice Pincoffs, professor of medicine in the University of Maryland and member of the State Board of Health; Dr. Perry S. Prather, deputy director of the Maryland State Department of Health; Dr. Huntington Williams, commissioner of health of Baltimore City; J. S. Strohmeyer, the water engineer; Dr. J. Roy Doty, secretary of the Council on Dental Therapeutics of the American Dental Association; and Dr. Myron S. Aisenberg of the dental school.

Judge Manley signed a decree dismissing the bill of complaint on November 12.[4] Two weeks later fluoridation was begun.

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2. Doty, J. Roy, and Phair, W. Philip. An Analysis of the Delaney Committee Report on the Fluoridation of Drinking Water. J. Am. Dent. A. 45:351 (Sept.), 1952.
3. Statement of the Commissioner of Health on Fluoridation of the Baltimore City Water Supply, March 3, 1952. Baltimore Health News Vol. 29, No. 8 (Aug.), 1952.
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Lord and Taylor Achievement Awards

The 17th annual Lord and Taylor awards for pioneering work in the field of human development were awarded to three organizations each of which has relation to public health.

One of the awards, which was accepted by its chief, Martha Eliot, M.D., went to the Children's Bureau "for its continuing contribution to the physical, emotional, and spiritual growth of children."

The recently organized Kips Bay-Yorkville Adult Counseling Center in New York City was cited for "defining the needs and problems of old age." Sponsored jointly by the Cornell University Medical College Department of Public Health and Preventive Medicine and the New York City Department of Health, Bureau of Adult Hygiene, and supported by the New York Foundation, the center is designed as a facility for helping elderly persons with a variety of problems—recreation, health, employment, financial security, housing, education, and problems of family, social, and personal adjustment. It might serve also as a model for other groups seeking new ways to serve the aged in their communities. The director of the center is Anne P. Kent, M.D.; its staff includes a clinical psychologist, a public health nurse, and social caseworkers. Chairman of its coordinating committee is Wilson G. Smillie, M.D., professor of preventive medicine at Cornell University, who accepted the award for the center.

The Social Science Research Council was selected "for increasing our knowledge of man and human relations" through its work in the several social sciences. A private corporation supported by foundations, the council services are used by educational institutions, government, and industry. Its president is Pendleton Herring, who accepted the award.

Facing Up to Budget Cuts

GEORGE JAMES, M.D., M.P.H., F.A.P.H.A.

At each Annual Meeting of our Association a number of panel, round-table, or other extempore sessions are held. Those who attend are helped and often inspired by the impromptu flow of thought, but the great body of the membership gains nothing from them. One such group decided that the members who could not attend should share in the benefits. You will be glad of their decision. Should we not have more of this informal sort of reporting?

✣ During the last sessions of the American Public Health Association in New York City, a small group met for a one-hour round-table discussion on "Facing Up to Budget Cuts." The meeting was the aftermath of the joint session of the Health Officers and Laboratory Sections held on November 11, at which each table considered a specific subject important to the members of these sections. Those persons who discussed the practical problems created by the recent sudden decrease in federal grants for public health became so interested in their lively exchange of ideas that they thought it worth while to summarize the content of this brief but stimulating session.

Mostly on the Debit Side

The schools of public health have already experienced a reduction in enrollment following the cuts in training funds, and further reduction in these funds will become proportionately even more serious. Recruitment is one of the gravest problems in public health. Since the incomes of public health workers compare unfavorably with the incomes of their fellow professionals in other fields, a major asset in recruitment has been the real opportunities for training fellowships in public health. Virtually all students seeking M.P.H. degrees come to the university through fellowships from various sources. G.I. benefits have now become a minor factor and, though some funds are available from voluntary sources, the vast majority of public health students are relying for their training upon state stipends allocated from federal funds.

Very few states have used much of their own direct tax moneys as training funds. Public health training and research cannot be looked upon solely as a local or even a state responsibility. The nation has always represented a truer picture of the recruitment pool for public health people. Health personnel move freely between states, between state and national organizations, and now that our nation has assumed vast international responsibilities in public health, there is constant pressure to recruit for health service abroad. To reduce training funds from federal sources will therefore not only affect the supply of public health personnel for service within the United States, but

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also of our nation's most valuable ambassadors of democracy's objectives. Thus, it is inappropriate to request state or county jurisdictions to take over the federal responsibility for training funds. No local professional training program can long survive unaided by the professional interest, funds, and educational institutions available to it from the outside.

When a federal health grant to states is reduced, one of the most expedient places to effect immediate savings is in training funds. Other program areas are "going concerns" with personnel already employed. Training funds are "potential" and each year's allotment is not identified under specific commitments prior to its becoming available.

An indirect but serious effect will be felt within the schools of public health. Universities, especially state-supported ones, are under increasing pressure to account for the high cost of professional education, the unit cost per student being the favorite yardstick. Public health, the most expensive of all of the programs of professional education, has an average annual cost per graduate student approximating $4,500. Part of this high unit cost reflects our already inadequate recruitment. As training funds decrease, and recruitment becomes increasingly more difficult, these unit costs will rise rapidly. Heavy pressure may then be applied to reduce academic and supporting nonacademic expenses. Such reductions, in turn, may impair the ability of the university to provide the adequate instruction, research, and service to governmental agencies, whether local, national, or international, which are now being rendered by the faculties of these schools.

In many states the legislatures hold biennial sessions only, and many of those that meet annually had adjourned before the time of the unexpected drastic budget cuts. This has left many states with no legal machinery with which to make up the loss from state funds in time to rescue their health programs. In many instances important personnel have been lost by several states. Such personnel represent a major investment in training and experience which will be difficult to replace, even if the funds should be restored by some later Congress.

It is true that a curtailment in federal funds should lead the states toward emphasizing the priority programs in preference to those of lower priority. However, it was pointed out that we are now in the "shock" stage. The suddenness, unexpectedness, and magnitude of the cuts have forced the states into short-term expedient measures, instead of allowing them to plan the best way of effecting the reduced budget without injuring vital programs.

One of these expedient "shock" measures of meeting the budget cuts has been by one or another type of vacancy control. A large number of positions which had been vacant at the time of the cut were immediately abolished or were otherwise held unfilled. Such measures are fiscal conveniences during periods of budgetary curtailment, but an important position temporarily vacant must be filled if the department is to meet its obligations. True economy in government requires more meaningful criteria for the allocation of moneys. Public health reasons should govern the abandonment of positions. Abolishing unfilled positions and other vacancy control measures have been forced upon the states because of the precipitous nature of the federal budget cuts. If adequate warning could have been given, the states could have devoted more thought to the places where they would have wished to effect savings, instead of being forced to resort to such expediencies.

The projects that have been supported largely by federal funds were those of the research, pilot, or demonstration

nature. In this present era when public health is attempting to explore new fields and develop programs against our major chronic disease killers, such research and demonstration is of the greatest importance. Curtailing these activities thus becomes a serious blow to the future of public health in this country.

In addition, this philosophy that the federal grant should be intended solely for research and demonstration is not sound, for the federal government needs the state services. It cannot maintain its responsibilities to the nation unless the states can insure a more or less uniform pattern of good health among their citizens. Hence, the federal government has a responsibility to assist the states in achieving this standard of health.

The current atmosphere of uncertainty about continuance of federal funds has prevented practical planning for the future. States no longer dare make use of federal funds available at present for the start of a long-range project. Yet the chronic disease aspects of public health, which concern us so much today, require long-range planning even more than any of our past efforts in public health. We are unable to consider federal funds as anything more than a temporary stopgap for services which we can most easily curtail if such funds are cut. Certainly, the present basis of curtailment does not strengthen our hand in seeking local funds to make up the deficit, since it was done so precipitously and without warning.

There are overhead costs with federal funds, a fact which has never been given adequate recognition by the federal government.

Mostly on the Credit Side

It is heartening that local groups have "picked up the check" in so many areas. One state, for example, was able to meet its local health needs for this year largely because its local health units were able to raise the required funds within the counties. Such examples are comforting, since they indicate that the local citizenry appreciate public health and are willing to support it. On the other hand, this ability, no matter how good the principle, is not uniform throughout the country, and the poorest areas with the greatest needs are the least able to assume the burden.

The recent budget cuts have highlighted the need for greater evaluation of our health programs. If they are followed by no obvious decrease in the level of public health, it may be taken by some as an indication that some of our public health activities are relatively unproductive. These cuts and the threats of future ones make it essential for us to evaluate all our health activities. It is probably true that we were giving too much attention to some relatively ineffective programs.

The budget cuts have resulted in some streamlining of operations and saving of needless expense. In one area the long-distance telephone bill was reduced by giving each worker a three-minute hour glass. (When starting a long distance call, the glass would be set, and it was surprising how often the business could be completed within the three minutes the sands took to traverse the glass.) This program in one state actually resulted in an appreciable financial saving without interfering significantly with communications.

Some states have decided to pass the budget cuts directly over to the individual citizen. The thought was expressed that if the cuts are made in Washington, there is no reason why state government should bear the total brunt of the interpretation of them to its citizens. Hence, many states have curtailed specific services for the citizen, labeling such restrictions as due in turn to specific federal cuts. The citizen is told whom he should hold responsible

for the reduction of a specific service to him and is given a personal appreciation of the value of federally-aided services.

The recent budget cuts have reemphasized the need for less categorizing of federal funds for health. If this should be a result of the current revisions of federal aid, then the states could make far better use of such funds even with the cuts. Public health administrators do not recommend a full-time tuberculosis, heart disease, or cancer public health nurse. The trend in public health is toward a generalized service, toward a team approach to health problems. More federal grants should, therefore, be allocated for "general health." Some states have had to trim their public health nursing budgets even though there were extra funds available in categorical grants, because the general health funds had been exhausted. When requiring basic services, these areas were unable to accept the high specialization offered by categorical funds, thereby defeating the very purpose of the special grants. Maintaining the basic costs for a local health unit is a practical step toward cancer, tuberculosis, and heart disease control, far more sound than the establishment of specialty clinics or consultants in areas bereft of adequate regular health services.

In concluding this active discussion, the group emphasized its hope that the report of the President's Committee on Federal-State Relations would precede any further modifications in federal grants. The role which such funds are playing in public health is so vital that changes should be based upon careful studies, long-range planning, and practical policies, well understood by all concerned.

Health and Housing

The New Jersey Association of Housing and Redevelopment Authorities contributes to the Public Health News of the State of New Jersey in its May issue an appeal by Murray M. Bisgaier for cooperation of health workers in the program for improved housing. Mr. Bisgaier points out that "health officials can hammer home the vast importance of environment and neighborhoods in physical terms. Having explained why soap and water do not remedy an organic defect, the health fraternity may now show why rat extermination in individual houses does not erase origins and growth of 'genus rattus.' If urban renewal is to be truly 'renewal,' the neighborhood must become the fundamental framework for a rational rebuilding program." Otherwise we may be treating the individual (or house or home) with the very finest of equipment and the latest in wonder drugs but without making any attempt to remove the causes of all the trouble. Leaders in the field emphasize this framework when they declare that rehabilitation of dwellings, clearing the slums, public housing and other positive reclamation tools constitute a unified program for better housing for all citizens. Mr. Bisgaier also points out that upon the strength and the leadership of municipal health officials will rest the answer to the question: Will our cities, in their dealing with slums, be fitted with a superficial, rouge-packed new face or will they be blessed with a living, healthy, organic new body? To a great extent the struggle by cities to remain communities for living will be won in the battle against blight.

Experiences in Immunization Against Tuberculosis with BCG Vaccine in Japan

BRIGADIER GENERAL CRAWFORD F. SAMS, MC, F.A.P.H.A.

In a country where wartime tuberculosis had assumed truly epidemic proportions, large-scale BCG vaccinations produced remarkable results in controlling the infection.

✣ The disease that kills or disables the greatest number of people—and which in the present state of our knowledge we can do something about—should be the primary objective on which the greatest effort is expended by those charged with preventive medicine and medical care programs. In Japan tuberculosis was the leading cause of death between 1932 and 1951, and therefore this was the disease upon which we focused much of our effort. It dropped to second place in 1951 as a result of these efforts. I might point out that more people died in Japan from tuberculosis in 1945 than were killed by two atomic bombs and all our air raids on all of those of the major cities that were practically leveled to the ground.

A study of the death rates from tuberculosis shows that in 1918 the death rate in Japan was only slightly higher than that of various western nations, such as the United States, Germany, Sweden, Italy, Denmark, England, and New Zealand. During the period 1918 until 1945 these countries had progressively reduced their death rates approximately 60 per cent through various control programs. This was accomplished through the standard procedures of health education, case finding, contact tracing leading to early diagnosis, and to extensive hospitalization and treatment programs. On the other hand, the Japanese death rate had a slight drop between 1918 and 1932 and then began a steady climb to reach a peak of 282.2 deaths per 100,000 population in 1945.

Much study was given to the causes behind the great divergence in tuberculosis death rates in that 27-year period. In an effort to find an answer to the question, we must consider the patient not only as an individual but must also study his environment and living habits. I cannot go into all of the detailed studies that have been made on this particular aspect of the problem, but they can be summarized briefly by saying that in comparing the group of other nations mentioned previously to Japan, we find that the opportunity for acquiring the disease in Japan is many times greater. As an illustration is the fact that the population density per square mile in Japan is the highest in the world. Second, that in Japan under such crowded conditions we find people

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living not in pairs in single rooms, but from eight to 12 people sleeping in one room, as contrasted to the custom in most of the other countries of two, sometimes three, individuals in one room. The Japanese habitually sleep on their backs with head rests which is ideal for the dissemination of droplet infections. Likewise, instead of providing ventilation for these crowded rooms at night, they are sealed tight since there is no heating in Japanese homes in the winter. It is obvious that a single open case of tuberculosis under such conditions will have a greater opportunity to spread tubercle-bacilli-laden droplets when he coughs than in the average European or American home.

Another factor is nutrition. In recent years research has shown the importance of the essential amino acids in protein of animal origin in developing body resistance to infection and the healing of body wounds. The nutrition surveys which we conducted for six years in Japan, examining 150,000 people every three months and actually weighing food consumed and analyzing its components, showed that the Japanese diet is deficient in the essential amino acids. The normal Japanese consumer, that fictitious individual who is a composite of all age groups and all economic groups, would require a minimum of 20 gm. of protein of animal origin, if he were to have normal growth and normal resistance to infection. Our surveys showed that he consumed in certain areas as low as 4 gm. per day. Another element in resistance to the tubercle bacillus is blood calcium. We found that the blood calcium level of Japanese children was approximately 40 per cent of that of occidental children on a normal diet.

There were only 25,000 beds for tuberculosis in Japan in 1945 and they were mostly empty as the active cases had left these hospitals because of shortage of food.

Contrast the environmental picture I have described in Japan with the picture in the United States and I think the high tuberculosis death rate in Japan prior to 1945 can be logically explained.

We do not ordinarily think of epidemics of tuberculosis comparable to smallpox, typhus, etc. However, under the circumstances outlined, I think we might well consider that we were faced with an epidemic of tuberculosis in Japan. After taking measures to control the "wildfire" type of epidemic, such as smallpox, typhus, and typhoid, which were occurring in Japan, we began our control program for tuberculosis. This program involved many facets.

We had to begin an extensive health education program to overcome the Japanese feeling that tuberculosis was a shameful disease to be concealed at all costs.

In organizing a nation-wide health center system of 800 centers during the Occupation, the Tuberculosis Control Division of each health center was established as a major function.

A tuberculosis control law was placed in effect which now requires that all individuals from infancy to 30 years must be tuberculin tested. If the tuberculin test is positive, a 35 mm film is made in an effort to determine whether the case is active. Since most of the tuberculosis in Japan is pulmonary, a suspicious first picture requires a re-x-ray on larger film, a physical examination, blood sedimentation rate, and repeated sputum tests. Under this program in the first year 330,000 new cases were diagnosed. In the second year, with improvement in the health education and the mass survey program, over 400,000 active cases were uncovered; in 1950 over 528,000 active cases were brought to light; and in 1951 590,000 were reported. This apparent increase in morbidity of tuberculosis did not mean that actually the incidence of tuberculosis was increasing. It simply

was a measure of improvement in our efforts to uncover the active cases which were spreading the infection to others because, at the same time this increase was occurring, our death rate was dropping rapidly.

To overcome the dietary deficiency and increase the resistance of individuals when they did acquire a tubercle bacillus, a school lunch program was inaugurated with powdered skim milk, a cheap source of protein of animal origin and of calcium, as the principle item in the school lunch. This eventually encompassed over 7,000,000 children and should pay in benefits as the years go on. The ultimate goal is 18,000,000 children.

Positive tuberculin tests, if we may assume that this is an indication of the presence of tubercle bacilli, showed that the Japanese acquire such bacilli early in life. If we take five-year age groups, we find the following:

Year Age Group	Per cent Tuberculin-Positive
0.0– 1	2.0
1 – 4	11.5
5 – 9	26.2
10 –14	44.9
15 –19	54.7
20 –24	65.9
25 –29	76.6
30 –34	77.7

There are 54,800,000 people in Japan who are under 30 years of age. A study of this group indicates that 25,500,000 or 46.6 per cent of these people have acquired a natural infection which leaves approximately 30,000,000 who could be protected if they could be immunized against tuberculosis with BCG. They have now been immunized.

The Japanese carried out numerous studies on BCG between 1927 and 1943 which cannot be discussed in detail. I can only summarize these studies by saying that on the whole mortality was reduced in the immunized groups by 88 per cent as contrasted to the control groups over three and one-half year observation periods. In 1943 the Japanese Research Council had evaluated the work done and recommended the extensive use of BCG. This program was initiated, but due to the war it collapsed. We began to push this program again at the beginning of the Occupation in 1945, immunizing that age group first which had the highest death rate—the 19 to 24-year age group. In 1945, 3,098,000 and in 1946, 6,729,833 tuberculin-negative young people were immunized with BCG. This program was continued with 7,000,000 immunizations or reimmunizations for 1947; 8,000,000 for 1948; and then the program was stopped from December, 1948, to October, 1949, because I was not satisfied with the results of our analysis of the reconversions of tuberculin reactions.

There were 11 laboratories making BCG vaccine. This was necessary because the life of liquid BCG vaccine is only about seven days, and to attempt to distribute this vaccine from a single production source within the time limits was impossible under the transportation difficulties which exist in Japan. With the limited number of qualified Americans I had on my staff, it was likewise impossible to exercise that strict control required over the production of BCG in the 11 widely dispersed laboratories. Tests of the product of these laboratories indicated a wide variation in potency. Carefully controlled studies on tuberculin reaction conversion and reconversion confirmed the wide variation in potency of the BCG vaccine production in these various laboratories. I therefore decided to convert to a dry vaccine which could be produced in one laboratory in which we could control the potency very carefully. The immunization program using dry vaccine was reinstituted in October, 1949, and is being continued to date. In 1950,

13,900,000 and in 1951, 14,214,785 immunizations or reimmunizations were given.

A brief description of the procedures used in the BCG immunization program is in order. First, as mentioned above, all individuals 30 years or under are given a tuberculin test (Mantoux test). Five T. U. of old tuberculin are injected intracutaneously. As you know, this consists of 0.1 ml. of a 1:2,000 dilution of old tuberculin. Our standard for reading the allergic reaction was as follows:

The nonspecific reaction curve, which may be plotted by measuring the area of redness each hour as it develops, reaches its peak within 24 hours. The peak is indicated by an area of redness 3 to 5 mm. in diameter. The specific reaction curve is indicated by an area of redness 7–8 mm. in diameter in 48 hours, reaching a peak of 10–20 mm. in 72 hours. Our procedure was to read the test in 48 hours. An area of redness which measured in two directions and averaged 9 mm. or more was considered a strongly positive-tuberculin reaction. An area 5–9 mm. in diameter was questionably positive. Any reaction of less than 4 mm. was negative.

All the individuals who were less than strongly positive received BCG. The 0.1 ml. of BCG vaccine used by us contained a 0.4 mg. of BCG culture in one ml. of 1 per cent sucrose. In other words, the BCG dose was 0.04 mg. of BCG culture. This must be given intracutaneously to avoid abscess formation and local lymphadenitis. If given subcutaneously, no increase in immunization measured by subsequent tuberculin tests occurs, but an appreciable number of abscesses and in some cases lymphadenitis develops. With carefully controlled intracutaneous injections it is an exceedingly rare case which develops a local abscess.

Follow-ups on conversions from tuberculin-negative to tuberculin-positive following BCG inoculation indicates that the highest percentage of conversion occurs in about three months.

We do not know the duration of immunity given by BCG. Danish workers such as Dr. Holme and American workers such as Drs. Rosenthal, Aronson, and others with whom we maintained constant contact, have assumed immunity varying from six months to five years. We have found, if we can use tuberculin as a measure of immunity, that we will obtain reconversions to tuberculin-negative in BCG immunized children in as high as 30 per cent within one year. Hence, our policy of reimmunizing all reconverted cases annually.

A word about production of BCG. We had an annual capacity of 30,000,000 doses in Japan in 1951. As those of you who have done laboratory work on tubercle bacilli know, the potency of the BCG culture is difficult to control and our procedure in order to maintain a uniform potency was to transfer from glycerin-bile-potato medium to Sauton's medium with no more than five serial passages on each medium. The pellicle from Sauton's medium was cultured and filtered, the weighed mass was ground with glass balls in a container revolving 100 rpm. To dilute 80 mg. of BCG culture per ml. of diluent 1 per cent sucrose was added. It is difficult to maintain a suspension for any length of time. The suspension, therefore, was immediately placed in ampules which varied from 20 to 100 ml. in capacity and were instantly frozen at −20° C. This temperature was maintained for one hour and then the vaccine was dried under vacuum for six hours at −40° C. The ampules were then sealed and retained at freezing temperature until used. Our assay standards required less than 2 per cent moisture, as we have found that if we go above that moisture content less than 60 per cent of the organisms will survive. Comparative tests with the dried

vaccine as contrasted with the liquid vaccine showed that dried vaccine refrigerated for four months will maintain 82 per cent tuberculin conversions for one year. On the other hand, after four months' refrigeration, if we use vaccine which has subsequently been permitted to stand at room temperature, our conversion rate drops within one year to 43 per cent.

What have been the results of this, the largest BCG immunization program in the world?

An analysis of the death rates from tuberculosis by five-year age groups shows that we have reduced the death rate from tuberculosis for the entire population, which includes both immunized and nonimmunized groups, from a peak in 1945 of 282.2 per 100,000 per annum down to 82.1 in 1952. This startling drop of 70 per cent in seven years which exceeded that which occurred in other countries in 30 years requires analysis. Practically all of this drop occurred in the immunized age group 0–29 years of age, inclusive. It must be borne in mind that this entire age group was not immunized for the entire period of five years, since it takes some time to accomplish these millions of immunizations and that only 53.4 per cent of that entire age group was immunized with BCG in the first place, since the others were already tuberculin-positive from natural infection. Within this 53.4 per cent only a fraction has been immunized for the entire five-year period. In the 30-and-over age group, practically no drop occurred until the year 1950, and the improvement in this group is the result of our medical care program using streptomycin and para-amino-salicylic acid in combination which began in 1949. Based on studies made in the United States, we could anticipate approximately a 70 per cent reduction in death rate among those selected cases which have already acquired a clinical case of tuberculosis and the results in treating these cases in this age group plus the 46 per cent of the 0–29 year age group who already have acquired a human tubercle bacillus should further contribute to the rapid drop in death rate in Japan.

We could, of course, have done nothing in the medical care field for those who already had acquired a clinical case of tuberculosis by simply letting them go on untreated and die. In about 30 years by continuing our BCG immunization program, beginning with infancy when only 2 per cent have already acquired a human tubercle bacillus, we could have produced a relatively completely immune population. However, we chose not to ignore that phase of the program but by increasing tuberculosis beds from 25,000 in 1945 to 101,000 in 1951 and by pushing our streptomycin and para-amino-salicylic acid therapy program, we will not only reduce deaths in that nonimmunizable group, but will also reduce the reservoir of active cases which serve to spread the disease to others. This treatment program is being applied to the 1,300,000 active cases of tuberculosis which have been uncovered in the 25,500,000 tuberculin-positive people less than 30 years of age.

Summary

Very briefly this is a bird's-eye view of a most extensive and what we believe to be a successful tuberculosis control program. The World Health Organization, as you know, is now carrying out on a lesser scale in Europe and southeastern Asia a BCG program using similar technics. The fact that this program has so drastically reduced tuberculosis deaths in Japan when all the environmental factors, including overcrowding, malnutrition, and collapse of normal living, caused by destruction of war, should have caused an increase in deaths as it did cause an increase in European countries, empha-

sizes the importance of BCG in the control of tuberculosis even under the worst environmental conditions.

A continued rapid drop in deaths from tuberculosis will occur in the future in Japan as a result of the program instituted during the Occupation. Great credit is due the comparatively small group of American personnel and the large group of Japanese who wholeheartedly cooperated in the initiation and maintenance of this program.

Health Council Initiates Operation Health Career Horizons

"The nation's 7,000,000 high school students can soon, for the first time, know something about the many careers in health now open to them," said A. W. Dent, president of the National Health Council, in announcing a nation-wide "Operation Health Career Horizons" at a recent luncheon in New York City. The project, unique in its comprehensiveness, is sponsored by the council with support from the Equitable Life Assurance Society of the United States, a council sustaining member.

Speaking to the council's Board of Directors Ray D. Murphy, president of the Equitable Society, pointed to the need for broad national action to close the gap between what the health professions know and what they are staffed to do to save lives and make them more worth living.

Dr. Leona Baumgartner, New York City's commissioner of health, spoke in behalf of the health professions. Dr. Joseph C. McLain, principal of the Mamaroneck Senior High School and 1953–1954 president of the National Association of Secondary-School Principals, represented the concern of educators in dealing with the career-decisions of young people.

"The aim of Operation Health Career Horizons," said Mr. Dent, who is president of Dillard University in New Orleans, "is to help increase the pool of health manpower in order to staff the health services people need, demand, and are willing to pay for. By bringing to the young people in our 26,000 high schools information on a wide range of health-career opportunities, it will open new channels to recruitment and enable all the health professions and their supporting services to reach more and more candidates."

Operation Health Career Horizons is a direct outgrowth of the council's 1954 National Health Forum. At the Forum leaders in education joined with representatives of the 48 national health organization members of the council in recommending this kind of across-the-board action to bring health-career information to young people throughout the country at the time they are making their career decisions.

In line with this recommendation, the Health Horizons project will produce and distribute three publications—a concise, all-in-one-package guidebook for teachers and vocational counselors; a brief leaflet for young people themselves and their parents; and a series of health-career posters for school and community use. All materials will be sponsored, approved, and issued by the National Health Council, with the Equitable Society assuming production and distribution responsibilities.

In acknowledging this support, Mr. Dent expressed the gratitude of the council "for the spirit of public service and the responsible leadership with which the Equitable Society is undertaking to help meet this critical need."

Vampire Bat as a Carrier of Rabies

AURELIO MÁLAGA-ALBA, D.V.M.

The many unique and arresting observations upon this long-neglected hazard to the public health may be read with comfortable objectivity by those members of our Association who live safely north of the few subtropical areas above the Mexico-U.S. border.

✢ Ever since Columbus discovered the Isle of Trinidad in 1498, it has been known that hematophagous bats exist in the Western Hemisphere. Francisco Montejo, conqueror of Yucatan, upon disembarking with his troops on the eastern shores of the peninsula in the year 1527, was victim of "a great plague of bats which attacked not only the beasts of burden but the men themselves, sucking their blood when they were asleep." [1]

In 1801 the Spanish naturalist, Felix Azara,[2] described "the biter" in Paraguay and Charles Darwin later, in 1832, captured in Coquimbo, Chile,[3] a vampire bat (Desmodus d'orbigny) on a horse's back.

Since early days, it was noted that some horses and cattle died after being bitten by vampire bats, but death was mistakenly attributed to loss of blood. The sanguivorous habit of vampire bats was first associated with disease in 1908 when ranchers in the State of Santa Catharina in Southern Brazil observed that bats were attacking and biting livestock in the daytime and that the animals thus bitten died of a paralytic disease called "peste das cadeiras." [4] In 1911 Carini [5] identified this disease with rabies on the evidence of clinical symptoms, the presence of characteristic Negri bodies and by rabbit inoculations.

Just as canine rabies is pictured as a disease in which the prominent feature is excitement or fury, vampire bat rabies in Latin America is characterized to the lay mind by weakness of the hind quarters, as indicated in the native names by which the condition is known in various countries: "peste das cadeiras" in Brazil; "tumbi baba" in Paraguay [6]; "rabia paresiante" in Argentina [7]; "renguera" in Costa Rica [8]; "derriengue" in Central America; "huila," "derrengue," or "tronchado" in Mexico.[9]

The Vampire Bat

Vampire bats in America have a wide geographical distribution; their range extends from Argentina and Chile (parallel 30°, Latitude S.) to Central America and Mexico (parallel 28°, Latitude N.). The desmodontidae, a highly specialized family of sanguivorous bats which is also characterized by walking on all fours, is composed of only three genera, each with a single species: Desmodus rotundus, the common vampire bat; Diphylla ecaudata, the hairy-legged vampire bat; and Dioemus youngui,[10] the white-spotted vampire bat.

Desmodus rotundus, the reservoir of paralytic rabies and the most common

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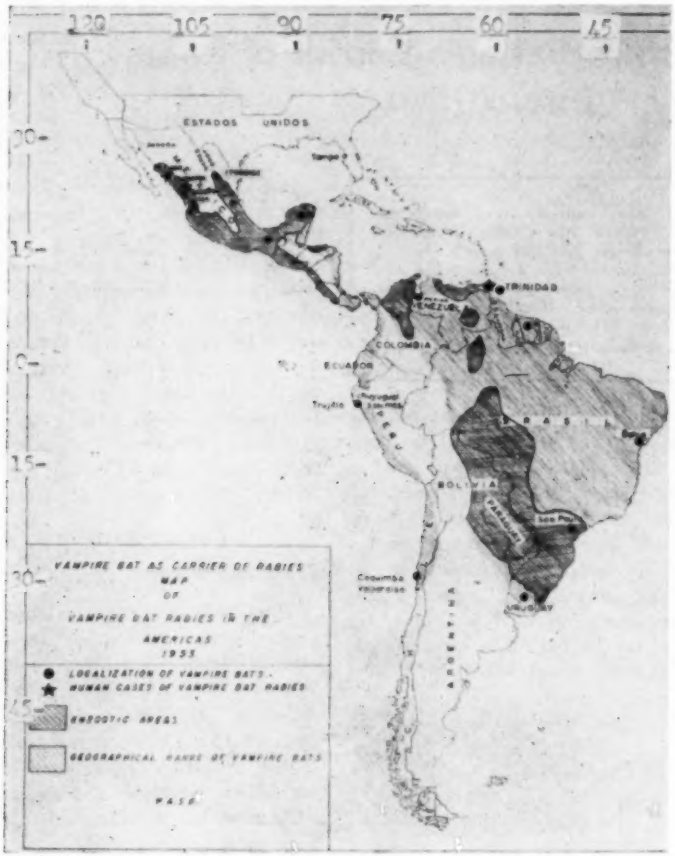

Figure 1—Map of vampire bat rabies in the Americas.

and widely distributed of the vampire bats, has been identified in greatly diversified climatic zones in Mexico, varying from the humid tropical zone of the Isthmus of Tehuantepec and the Gulf Coast to the higher arid valleys of the Central Plateau and even in the semi-desert zone of Sinaloa and Sonora. There is good reason to believe that distribution of the vampire bat now encompasses a far greater area than it once did, favored by an increase in the livestock population and the tropical climatic conditions found in the valleys, canyons, and arroyos. Specimens of Desmodus rotundus have been identified by the writer as far north as Parallel 28°, Latitude N. in Potan, Sonora, and recently (October 18, 1953) in Guadalupe Cave, Canyon de Iturbide, 25 kilometers southwest of Linares, Nuevo Leon, and only 150 kilometers from the United States border.

Diphylla ecaudata, apparently a less adaptable species, was discovered in December, 1952, in the Sepultura

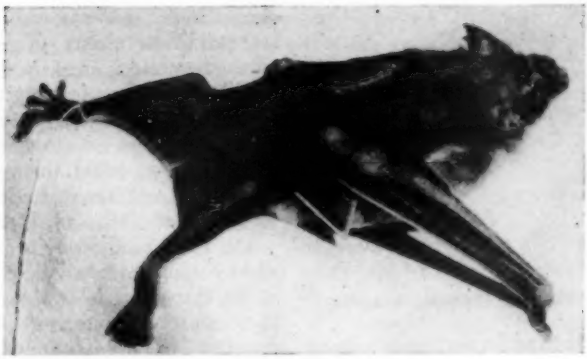

Figure 2—Common vampire bat Desmodus rotundus.

Cave,[11] some 30 kilometers northwest of Ciudad Victoria and 290 kilometers farther north than they had been previously recorded by Dalquest and Hall.[12] In this cave large colonies of both D. rotundus and D. ecaudata were found. Dioemus youngui has only been identified in Brazil, Guiana, Venezuela, and Colombia. This bat, which resembles D. rotundus, is darker in color and characteristically presents white markings on the wings.

Before civilization made the vampire bat less directly dependent upon its environment, it must have fed on wild mammals and birds. H. C. Clark,[13] cited by Trapido, informs us that "the natives inhabiting Tabago Island say that before horses and cattle were brought to the island, the vampires inhabiting the sea caves there fed on nesting or roosting sea fowl." In Mexico a dead deer was found by the writer with evidence of having been bitten behind the ear. In Chile, Mann [14] reports that vampire bats feed on seals, biting them on the ears, and Peterson Bole, Jr.,[15] in Panama, found a spiny rat (proechimys) with characteristic bat wounds on the neck.

Figure 3—Face of Desmodus rotundus.

D. rotundus, like the majority of bats, is a cave dweller; in the warmer parts of the continent they form very large colonies, while in the more temperate climates they are less numerous. They have been found inhabiting calcareous caves or volcanic caverns. In the summer they may scatter into higher altitudes or fly to higher latitudes. They may be found roosting in hollow trees, in culverts, or beneath palmetto leaves, but evidently they prefer the dark side galleries of large caves. Young Desmodus and their mothers have been found nesting in colonies of 20 and up to several thousand in the fissures and crevices of limestone caves. Adults, when alarmed, generally fly away, leaving the young clinging to the crevices in the walls where they can be easily captured with the bare hand.

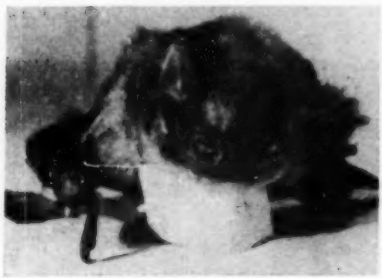

Figure 4—Face of Diphylla ecaudata.

D. rotundus and D. ecaudata, judging from the specimens captured by the writer, breed throughout the year, and the female has no more than one offspring. The period of gestation is of approximately five months. Newborn bats seem more numerous in April and September and, since Wimsatt and Trapido [16] have observed postpartum cestrum, one wonders if the female can bear two offspring in a single year.

At the approach of night the vampire bat leaves the cave in search of food, traveling probably within a radius of some 15–20 kilometers. It alights with an appreciable flop directly on its pray, crawls to the desired spot, bites, and feeds until its hunger is appeased without disturbing the victim. Horses are generally bitten on the sides of the neck and on the withers, causing much trouble because of interference with the saddle.

Cattle are usually bitten on the base of the ear where numerous superficial veins are found. These animals are also bitten along the line of the back or on the base of the tail. Swine are bitten on the ear, on the coronet of the hoof, or on the nipples. Other domestic animals such as sheep and goats are bitten only occasionally. Fowl are bitten generally on the vent and the comb and when bitten on the fifth toe frequently bleed to death. Although vampire bats have been seen attempting to attack dogs, the dog perhaps can avoid them because of its ability to perceive the ultrasonic pulse emitted by the bat. The vampire bat, when in a fighting mood, uses its canine teeth to produce a deep and painful gash which leaves a visible scar, and when rabid, they fight among themselves and even attack man and other animals in broad daylight.

The bite produced by a vampire bat when feeding can be easily recognized by its shape and location; it is crater-like, sharply circumscribed, with a diameter of approximately four millimeters.

In some way the bat either parts or combs the hair so as to allow a direct bite on the bare skin. With its incisor teeth admirably adapted to its needs, it snips out a small circular section of the victim's skin and begins to feed. Microscopic examination by the writer of the tissue surrounding a wound produced by a bat on a cow's ear disclosed that the bite extended through the four layers of the epidermis down to the stratum reticularis of the dermis, but did not involve the paniculum adiposum or the areolar tissue between the skin and the cartilage of the ear. This compares with the findings of King and Saphir [17] in the case of experimentally bitten pigeons, chickens, and guinea pigs.

In one case it was found that the bite had been made directly into a small vein. Only a few drops of dried blood were found adhering to the hair, an indication that the hemorrhage had not been great. Bleeding generally stops within two to 15 minutes, depending on the caliber of the wounded vessel. Even on histological examination practically no crushing is observed around the border of the wound; the bite seems to be as clean as a razor cut and the absence of tissue damage and prothrombin apparently prevents the rapid coagulation of the blood.

To feed its young the bat frequently

reopens a previous wound. When this happens, judging from the blood coagulum and the soaked coat of the animal, the bleeding is profuse, especially in the horse. The sanguivorous habit of the vampire bat is extremely dangerous, as it may not only bite repeatedly, inoculating the infected saliva with its teeth, but while lapping the blood it may also saturate the wound with its saliva.

In the warm, tropical areas of the continent, man is sometimes exposed to the bite of the vampire bat. Because of the heat and humidity, human habitations are usually nothing more than a thatched roof, thus permitting easy entry of hematophagous bats which may feed on the exposed parts of the human body—the toes, the ball of the foot, the nose, or the fingertips. The individual is rarely awakened, as the bite causes no discomfort, although on occasion the wound may bleed freely. Vampire bats can be a plague to a community. Just as villagers during the rainy season drive their cattle away from the infested valleys, they have on occasion had to abandon their homes and move out of the reach of vampire bats. Such is the historical case of San Bartolome de los Llanos—now called Venustiano Carranza—in the State of Chiapas, and in Tiltepec de los Ciegos in the State of Oaxaca, Mexico.[18]

Rabies in the Vampire Bat

Rabies in bats may manifest itself in the classical furious or paralytic type, or it may depart from typical rabies in mammals and resemble rabies in birds.

In the classical form there is the usual incubation period. In many instances a prodromal or invasive stage sets in, followed by a period of excitement, and finally paralysis terminating in death.[19] The incubation period varies from nine to 38 days, the average being 25 days. A prodromal stage of short duration (12–24 hours) is often observed; the bat is restless and easily irritated, presenting muscular tremors, or it may be apathetic and off its feed. This stage is rapidly followed by that of excitement and "fury," when restlessness and irritability become the prevailing symptoms.

In El Platanito, in the State of Sinaloa, Mexico, one furious vampire bat attacked a group of sleeping children and, in spite of being driven away, returned to the attack, biting 10 persons.[20] The state of "fury" lasts from one to five days and is followed by either a return to normal habits or, what is more usual, by paralysis and death. Paralysis may first appear as paresis of one or another limb and may develop into spastic paralysis of the muscles of the wing or the leg. The muscles of the eyelids, the neck, and the lower jaw are nearly always affected. This paralytic stage may last from one to four days.

In the Palo Bolero Cave in the State of Morelos, Mexico, two naturally infected vampire bats were found. One, outside the cave, was struggling on the ground unable to fly or walk; the other was inside the cave, hanging loosely by the claws. The first bat was unable to turn over when placed on its side or on its back and died 18 hours later; the second showed typical flaccid paralysis of the lower jaw, the neck, and the wings, and could only move the legs with great difficulty. Death, through apparent respiratory failure, occurred on the second day.

The reduction in the number of bats observed during an outbreak of paralytic rabies in cattle indicates the self-limiting character of the disease, but the length of time that the colony requires to reach its original number can be judged only by the reappearance of the disease in livestock which usually shows a periodicity of from two to three years. The infected colony, reduced in number, probably disperses and the groups take refuge in suitable hide-outs. Here they

multiply for two or three years until they become crowded and, one day after mating, the females and a few males flock back to the ideal conditions of their original roosting place.

The following observations were made by the writer in Palo Bolero: The population of the cave in June, 1951, was estimated at 800 bats. In August, 1952, paralytic rabies was reported in the area; in September two bats, which later proved positive to rabies, were found dying. In December of the same year the number of bats had been reduced to no more than 80 and the colony had divided into three separate groups. In August, 1953, one of the groups was trapped; 15 bats were captured and from 10 to 15 adults flew away. The captured bats consisted of one lactating female, three male adults, and 11 young. This would indicate that almost every adult female had given birth. The other two groups which were left undisturbed numbered some 150 bats. At this rate it would seem that the colony should reach its original number within three or four years.

Carrier Stage

In 1933 Queiroz Lima and Alvaro Salles [21] observed that experimentally inoculated vampire bats could not only transmit rabies, but, in a state of apparent good health, could act for a considerable time as rabies carriers. Silvio Torres [22] at the Experimental Station of Deodoro confirmed this surprising observation. He inoculated nine D. rotundus with a strain of vampire bat rabies. Five died of typical rabies, while the other four remained healthy and later proved to be passive rabies carriers. Another four D. rotundus were subjected to the bites of a vampire bat known to be a rabies carrier. Two of the bats died of rabies; the remaining two survived and continued transmitting the disease.

Queiroz Lima [23] also was the first investigator to observe the disease in naturally infected vampire bats. He found that in the enzootic areas of Brazil hematophagous bats in a state of apparent good health harbored the rabies virus in the brain and salivary glands. Torres and Queiroz Lima [24] conclusively proved in 1934 that the carrier stage exists in nature. Five D. rotundus, after being in captivity for 28 days, were fed on two calves on 10 alternate days. One of the calves died 48 days after being bitten for the last time. The other died 131 days following the first experiment and 32 days after having been exposed for a second time to the bite of the last of the surviving bats. This vampire bat, in perfect health, was killed five days later. The two calves and the bats were found positive for rabies by microscopic examination as well as by animal inoculation, thus proving conclusively that these bats were natural carriers.

Pawan [19] found that in Trinidad the same bat (D. rotundus murinus Wagner) was the transmitting agent in the spread of paralytic rabies among animals and human beings, and that the disease affected not only blood-lapping but fructivorous and insectivorous bats. His observations confirmed once more that: A high proportion of apparently healthy bats are definitely infected with rabies.

How long the naturally infected bat can live and act as a carrier is not known. Uninfected vampire bats at the Gorgas Memorial Laboratory have lived and reproduced in captivity for more than five years, and one lived over 12 years.[13] The epizootiology of vampire bat rabies would seem to indicate that the carrier would not necessarily have to live that long in order to maintain the periodicity of the disease. Pawan [19] found the brain of a D. rotundus infective after five and a half months of captivity. Queiroz Lima and Torres [24]

sacrificed a proved carrier in apparent good health after seven months of captivity.

The number of infected vampire bats in a colony even at the height of an epizootic outbreak is not great. Metivier [25] states that 10 per cent of the D. rotundus captured in Trinidad were found to be infected. Pawan [26] examined 233 vampire bats, 24 of which proved positive for rabies. He also examined 2,292 bats of different species for Negri bodies and of 88 positive bats (3.8 per cent), 83 were identified as D. rotundus.

Téllez Girón and Johnson [27] captured in the State of Michoacan a total of 74 D. rotundus but only were able to isolate rabies virus in a pooled sample of the salivary glands of eight bats. The writer examined 100 brain specimens of D. rotundus and D. ecaudata and found only two positive cases. Another specimen showing atypical inclusions was found negative on mice inoculation.

Discussion

Rabies in the Order Chiroptera is not limited to vampire bats. Besides D. rotundus and D. ecaudata at least seven different species have been found infected in nature. Rehaag in Brazil (1916) reported for the first time a fruit-eating bat, Phyllostoma superciliatum, as being infected with rabies; Pawan in Trinidad (1931) found five Artibeus, one Hemiderma, and one Diclidurus harboring the rabies virus.[26] Reagan and Brueckner [28] successfully transmitted canine rabies to the cave bat, Myotis lucifugus, and the large brown bat, Eptesicus fuscus. In Mexico numerous reliable reports have been received of other than blood-lapping bats attacking man and animals. In two instances the bats were identified as Molussus nigricans (Sinaloa 1951) and Macrotus mexicanus (Coahuila 1952). Unfortunately, the specimens were received in a complete state of putrefaction.[29]

In Campo, Calif., one bat was killed in 1952 and another in 1953 after swooping down in broad daylight upon children playing out of doors. The specimens were not saved for identification. The first positive report of rabies in bats in the United States incriminated the yellow Florida bat, Dasypterus floridanus, and the Seminola bat, Nycteris borealis seminola, as reported by Dr. Albert Hardy, director, Florida Bureau of Laboratories.[30]

One must emphasize that rabies in bats does not differ substantially from rabies in birds. The clinical symptoms in fowl are characterized by incoordination, paresis, followed by paralysis, emaciation, and death.[31] The furious type of rabies is seen at times. In one instance, the writer observed rabies in a hen 35 days after it was bitten by a dog. It became aggressive and, clucking and ruffled like a setting hen, chased the observer out of the chicken yard. The hen developed paralysis and died four days after the first appearance of symptoms. Often the fowl recovers from almost complete paralysis and the virus in a latent state has been recovered from the brain.[32] Von Lote [33] succeeded in infecting rabbits and guinea pigs with the brains of two eagle owls which had died without manifesting rabies symptoms two and a half and nine months, respectively, after being inoculated.

The carrier state of rabies in the vampire bat has been considered an aberrant form of the disease, but this concept must be modified and the condition recognized as the typical manifestation of the disease in the Order Chiroptera, especially since the critical experiments of Pawan [34] in fruit-eating bats, Artibeus planirostris trinitatis, have proved that bats may (1) recover and harbor the virus in the brain and salivary

glands, (2) behave like healthy or passive carriers, or (3) die of rabies.

It has been demonstrated by biological inoculations that the virus harbored by the bat has altered its pathogenicity and developed a definite species specificity. It is a well known fact that cattle in general are more susceptible to rabies than the dog,[35] and that the dog is more susceptible than the human being.

The low incidence of vampire bat rabies in man is remarkable when one considers that the disease in cattle has been recognized for almost 45 years and that the number of animals killed by the disease can be counted in the thousands. The first human cases were reported in Trinidad in 1925 [36] and since then 89 deaths from vampire bat rabies have been registered on the island.

The first case of vampire bat rabies in man reported outside the Isle of Trinidad was brought to light in April 1951, by Dr. H. Larin Landa in the State of Sinaloa, Mexico.[37] A patient gave a history of having been bitten 28 days previously in the act of killing a bat which had attacked his children. A survey made with Dr. Humberto Garza, epidemiologist of the State of Sinaloa, and Dr. Manuel Ramirez Valenzuela of the Instituto de Investigaciones Pecuarias, Palo Alto, D. F., confirmed this report on the basis of epidemiological findings and typical clinical symptoms. The surviving relatives related that in the village of El Platanito a furious bat had attacked the sleeping children of two neighboring families at dawn, and that 10 out of 13 persons were bitten (nine children and one adult male). The children's ages (five boys and four girls) ranged from two to 12 years. Two or three weeks after having been bitten in multiple places by the bat, two boys and two girls died with definite symptoms of paralytic rabies without having received medical attention.[11]

In June of the same year, in the municipalities of Bolaños and Chimaltitlan, in the State of Jalisco, seven persons were bitten by vampire bats and three died with clinical symptoms of paralytic rabies.[38] In May, 1952, another case was reported in Ixtlan del Rio, Nayarit, where derriengue is enzootic. Bats sent for investigation were identified as D. rotundus, but they were found to be negative for rabies.[39]

The absence of human infections in Brazil, Venezuela, and Central America cannot be attributed solely to the lack of satisfactory information, but principally to the slight susceptibility of human beings to this disease. The number of persons bitten by sanguivorous bats in the enzootic areas is considerable and greatly exceeds the few known cases of vampire bat rabies in man. These cases must be considered the exception rather than the rule. This opinion is apparently confirmed by the fact that in several laboratories in Mexico, where homologous brain tissue vaccine has been produced, the infected material has been handled with the bare hands, without regard to the presence of abrasions or cuts on the assumption that the virus was not pathogenic for man.[40]

Summary and Conclusions

Vampire bats have been known to exist since the early discovery of America and for the past 45 years they have been known to transmit paralytic rabies to livestock.

The vampire bat, D. rotundus, has a wide distribution and its range extends from Argentina and Chile (parallel 30°, Latitude S.) to Potan, Sinaloa (parallel 28°, Latitude N.). Thus far, the nearest locality to the United States border where vampire bats have been found is Guadalupe Cave near Linares, Nuevo Leon, only 100 miles from the border.

The habitat of the vampire bat is limited to the tropical and semitropical areas, or where geographical accidents determine such climatic conditions.

Rabies in vampire bats may (1) manifest itself in the classical furious or paralytic type common to all mammals, (2) resemble rabies in birds or, (3) develop a characteristic carrier state without showing any symptoms. This has been observed in nature and has been reproduced in experimentally infected bats.

The rabies virus by repeated passages through the bat has modified its pathogenicity, developing a species specificity. The virus is of low virulence but of high invasiveness; it shows greater pathogenicity for cattle and other domestic animals. Dog and man are decidedly less susceptible to this strain. While in the enzootic areas of 15 countries of this continent animals are killed annually by the thousands, vampire bat rabies in man has only been reported in Trinidad and Mexico.

The high susceptibility of some animals to the vampire bat rabies strain and the low susceptibility of man and dog has considerable epidemiological importance, because, although the public health hazard is not so great, it does not minimize the possible danger of the bat as a rabies carrier.

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New Jersey Alcoholism Conference

The New Jersey State Health Department held a Conference on Alcoholism in Trenton on December 16, 1953. The state carries out its official activities with respect to alcoholism, particularly rehabilitation of its victims, in a Bureau of Alcoholism within the Division of Chronic Illness Control in the State Department of Health.

The proceedings of that conference now constitute the March issue of "Public Health News" of the New Jersey Department of Health.

Here is the history of how New Jersey began its recognition of the alcoholism problem. (Incidentally, it challenges Connecticut's claim to being the first state to recognize alcoholism as a public health problem and practically hands the honor to Oregon.) Here, also, are addresses by Selden Bacon, director of the Yale Center of Alcohol Studies, and other staff members of the center, by institution and industry representatives. The medical supervisor of the Dupont Company, for example, pointed out the economy in preventing or rehabilitating the alcoholic in comparison to the cost of training a new worker to take his place.

Says the report, "Copies are available to individuals and organizations upon request." New Jersey State Department of Health, Trenton 7.

Interviewing Versus Diary Keeping in Eliciting Information in a Morbidity Survey

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There are many suggestions here for the public health planner who may be prompted to take a local illness census to serve as the basis for a community program.

✣ Workers in the field of public health are well acquainted with the need, largely unmet, for current information on illness and disability in the general population. The primary objective of the California Morbidity Research Project, conducted by the California State Department of Public Health, is to develop and test a method of morbidity measurement which can be used to provide valid illness data on a current statewide basis. Weissman's earlier report [1] describes in some detail the objectives and planned procedures of this project.

The first part of the project's research included a comprehensive study of potential methods of morbidity measurement in the city of San Jose and an adjacent area. Methods investigated included: (1) the use of operating program data (such as disability insurance and school absence records) for projecting illness rates in the general population; (2) the collection of illness data from physicians and hospitals; and (3) the household sample survey. To apply the last of these methods, the department contracted with the U. S. Bureau of the Census for design and selection of the sample, recruitment and training of interviewers, collection of information from the respondents, and similar services.

Some Problems in Household Sample Surveys

The household sample survey appeals on many grounds as the method of choice for obtaining illness rates in a general population.[2] It offers a means of securing illness and population data simultaneously. By its use, information may be obtained on illness not recorded in other sources. However, as the number of household surveys has increased, it has grown more apparent that variations in survey procedures might of themselves account for important variations in the findings. Data for answering basic methodological questions have been relatively scarce, and choices between alternate feasible procedures could seldom be made by evaluating their probable effects through use of clear-cut experimental data. Therefore, while the San Jose study tested the survey versus other potential methods (Nos. 1 and 2 above), it also provided for investigating differences between results of applying various household survey procedures.

Mr. Allen is survey statistician and Dr. Breslow is chief, Bureau of Chronic Diseases, California State Department of Public Health, Berkeley, Calif. Mr. Weissman, formerly supervisor, California Morbidity Research Project, is now with the Kaiser Foundation, and Mr. Nisselson is chief, Methods Research Section, Field Division, U. S. Bureau of the Census, Arlington, Va. This paper was presented before the Biometrics Society and the Statistics Section of the American Public Health Association at the Eighty-first Annual Meeting in New York, N. Y., November 10, 1953. This investigation was supported by a research grant from the National Institutes of Health, U. S. Public Health Service.

In designing a survey procedure the criterion used should be attaining a specified degree of accuracy at a minimum cost. In measuring accuracy of a sample survey one must take account of sampling errors—errors which arise because a sample, not the total population, is enumerated. In measuring accuracy of complete censuses as well as of sample surveys account must be taken of nonsampling errors. These include errors attributable to faulty definitions, to interviewers, and to many other sources, including the survey respondents themselves. In the field of household sample surveys to measure morbidity consideration of nonsampling errors may well be of paramount importance in choosing between methods.

Sources of error in surveys include many that may operate with varying impact as the data collection procedure itself changes. Design of the collection procedure was therefore an important question in the San Jose test. This early report, addressed to other workers as well as to statisticians, has the purpose of presenting some of our data bearing on the evaluation of a frequently used procedure, namely, interviewing about a calendar month by contrasting its results with two alternate procedures: interviewing about the immediate past, and diary maintenance.

A major difficulty in interpreting morbidity data obtained by interviewing in morbidity surveys, as Collins [3, 4] and many others have pointed out, lies in assaying the effect of errors of memory—a class of nonsampling errors—on the information furnished by a respondent. Such errors might arise when illness is forgotten entirely, so that underreporting results; or, if the illness is remembered, its date may be incorrectly recalled. Then, too, illnesses for a specified time period will be overreported if erroneous inclusions in the period predominate, or underreported if erroneous exclusions predominate. Again, in surveys using an available respondent to report for all members of a household, "memory errors" may arise because this respondent never knew about another member's illness.

It is apparent that some data collection procedures will provide data less subject to memory errors. The interview which requires a respondent to report for a short period in the recent past should elicit a more complete account of illness than the interview procedure which requires reporting of events for a longer period. A day-to-day record of illness—a diary—maintained by the respondent should be subject to a minimum of error arising either from forgetting the fact of illness or from incorrect recall of its dates; and, if the person charged with maintaining a diary inquires about other members of the household each day, errors arising in interviews from respondent's lack of knowledge of another's illness should be minimized in the diary.

The diary as a means of securing data has been investigated primarily in the fields of consumer expenditures and food consumption.[5, 6] There is much now known about the types of biases that can appear in diary studies.[5-7] However, there are few if any unequivocal statements that can be made about the characteristics and quality of data obtained by diary keeping, particularly with regard to variations in the length of time the diary is maintained and the type and amount of assistance offered the respondent. No tests of the diary as an independent method in sickness surveys have been previously made. A form of diary, "an attractive household calendar," was used in the Canadian Sickness Survey,[8] and a diary was used in the family health survey conducted by the University of California School of Public Health.[9] In these instances, however, the diary served as a reminder for reporting at the interview.

Methods and Definitions Used in San Jose

The San Jose household sample survey was set up so that comparable subsamples (each of about 400 households, including about 1,100 persons) were responding under interview and diary procedures for the same three-month period.* The interview schedules included questions about illness "yesterday" (the day before the date of interview) and questions about illness "last month" (the calendar month before the month of interview). This arrangement makes it possible to contrast results of reporting at interview on a short recent period with those of reporting on a longer period. Interview elicited rates for "yesterday" as well as for "last month" can be compared with diary elicited rates.

In order that questions spoken at interview would have as nearly as possible the same impact as questions printed in the diary forms, we used the same questions in so far as the essential differences in the two response situations would permit. At the interview respondents were asked about illness, accidents, and injuries "yesterday," and separately, "last month." An "available household respondent," usually the housewife, furnished information for all members of the household at interview. Likewise, a single respondent, usually the housewife, was requested to maintain diaries for all members of the household.

Each person who was reported at interview or in the diary to be "sick," to have "had an accident or injury," to have "felt the effects of an earlier accident or injury," or not to have "felt as well as usual" was tabulated as having an illness. "Illness" as used here, then, represents a composite of the meaning of these terms to all respondents in the survey. Disabling illnesses include those which were reported as causing confinement, either all or part of a day, to hospital, to bed at home, to the house but not to bed, and other illnesses reported as causing inability "to work or carry on other usual activities." Medically attended illnesses were those for which a "yes" answer was given to the question, "Was a doctor seen?" (In the present report, only episodes attended during the reported period of illness are classed as medically attended.)

After "illness" had been defined for data collection purposes, it was necessary to distinguish one period of illness from another in order to compute monthly rates of the incidence type. After considering several alternatives, it was decided to use the survey respondents' definition—that is, to tabulate illnesses as beginning or ending on the dates recorded in the forms used. Under this practice, successive spells of sickness separated by an interval of only one "healthy" day were each counted as periods, or episodes, of illness.

In the diary one- or two-day intervals between recorded bouts of illness were much more frequent than in interviews. Consequently, if the data had been edited so that periods of illness were consolidated, rates from the diary would have been reduced more than those from the interview. It is seen, then, that the definition of episode used affects interview diary comparisons in terms of the "incidence" and "episode" rates discussed below. Use of another definition would not have changed the basic pattern, however. When the problem of defining "episodes" is avoided entirely, by considering the number of persons ill one or more times during a month, diary interview differences are decreased, but remain significantly large.

* Both interviews and diaries were used in continued coverage studies of certain subsamples. This report deals only with the first interview or diary obtained from any subsample.

Discussion of Data

Among many other factors entering into comparisons of the results of one survey procedure with those of another the form of the illness rate used to express results has some influence. This may be seen in Table 1, which shows the relationships between interviews and diaries when they are compared in terms of four commonly used statistical expressions of morbidity. Relationships are shown as ratios of the rate obtained from the diary to the rate obtained from the interview. Diary interview differences are not constant from one type of rate to another—diary elicited incidence rates are about twice as high as rates elicited by interview, while the ratio for days of disabling illness per person-month is close to unity.

Whatever rate is considered, the pattern of differences between procedures which emerges from the table is clearly related to errors of memory. As Collins [3] has shown, nondisabling illness will be forgotten more rapidly than will disabling illness. In San Jose interprocedure ratios are closer to unity for disabling illness than for nondisabling. Similarly, medically attended illness should be recalled more frequently than unattended illness, and in our data interprocedure ratios for medically attended illness were not substantially different from unity, whether or not disability was reported. The ratios for unattended illness indicated a much greater difference among the procedures. The greatest differences were observed for illnesses which may be readily assumed to have the least mnemonic weight—those illnesses which were neither disabling nor medically attended.

Interview elicited prevalence rates used in Table 1 are based on illness present "yesterday." When these rates are compared with prevalence rates from the diary, it is observed that diary elicited reports of illness were less frequent than interview reports covering a short period in the recent past. Again, as in the case of rates applying to a month, interprocedure ratios were close to unity for medically attended illness, and there was less difference between the two for reports of disabling illness than for nondisabling. (It may be observed here that prevalence rates of disabling illness elicited for "yesterday" at interview were also higher than comparable rates elicited for "last month.")

Some of the differences between prevalence rates from interviewing about "yesterday" and rates from the diary may actually be due to overreporting under the first procedure. Memory losses would affect reporting by diary, of course, to the extent to which respondents allowed relatively long intervals to elapse between entries. On the other hand, one cannot dismiss the possibility that respondents at interview did not distinguish "yesterday" from a longer period in the recent past. To the extent to which this happened, illness "yesterday" would be overreported. The order of questions used in our interview schedule may have encouraged this type of overreporting, since the "yesterday" questions preceded those on "last month," and respondents were not informed at the start that both questions would be asked. (A recent study by the Division of Public Health Methods, U. S. Public Health Service, indicates that the first period about which inquiry is made in a survey is the period for which most illness is reported.[10])

Choosing Among Alternate Procedures

As noted, wide differences were observed between rates of illness elicited by different procedures, these differences being due largely to differing impacts of errors of memory. As quantitative expression of the differences, one may say that twice as many episodes of illness were reported under the diary

Table 1—Diary Interview Ratios for Selected Rates of Illness, March–May, 1952, San Jose Household Sample Survey *

Class of Illness	Ratio of Diary Rate to Interview Rate			
	Episodes (A)	Incidence (B)	Prevalence (C)	Days of Illness (D)
All Illness	1.9	2.1	0.6	a
Medically attended	1.2	1.1	1.0	a
Not medically attended	2.3	2.7	0.4	a
Disabling Illness	1.8	1.8	0.8	1.0
Medically attended	1.3	0.8	1.0	0.9
Not medically attended	2.0	2.1	0.7	1.3
Nondisabling Illness	2.1	2.4	0.5	a
Medically attended	1.0	1.3	1.0	a
Not medically attended	2.5	2.8	0.3	a

A—Episodes: Periods of illness beginning in, ending in, or extending throughout a month per 100 person-months.
B—Incidence: Periods of illness beginning in a month per 100 person-months.
C—Prevalence: For the interview, persons ill "yesterday" per 100 persons; for the diary, persons ill on the average day in the recorded month per 100 persons (computed as the percentage ratio of days of illness to man days of observation). Since interviewing did not take place on Sunday or Monday, "yesterday" could not have been Saturday or Sunday. For this reason, Saturdays and Sundays were omitted from the computation of the prevalence rates based on the diary.
D—Days of illness: Days of disabling illness per month per person-month.
[a] Days of nondisabling illness were not reported at interview.
* Data apply to subsamples scheduled for diary maintenance. Information obtained by interviewing a small number of respondents who would not maintain diaries and by interviewing those who moved into sample dwelling units after the survey began is included. The effect of these inclusions is small. Excluding those interviewed from the subsamples scheduled for diary maintenance, one obtains a rate for all illness of 70 episodes per 100 person-months; including those interviewed, one obtains a rate of 69 episodes per 100 person-months. The diary/interview ratio is unchanged in the digits shown.

Selected households maintaining diaries received scheduled assistance visits from interviewers; others received assistance visits at their own request. Additional selected households were scheduled for telephone or mail follow-up during the diary maintenance period. Data shown are based on all households maintaining diaries, whether or not assistance was rendered.

Initial diaries for three subsamples (III, IV, and V) covered only that portion of a month remaining after interview. Although interviews took place early in these months, it has been necessary to adjust data from these diaries to a whole-month basis. This adjustment was based on the assumption that morbidity reported in the latter part of the month represented the entire month—an assumption which is not valid during a period of seasonal change. Since the trend of morbidity during the survey period was sharply downward, the effect of this insufficiency in our adjustment procedure was to lessen the apparent differences between the interview and the diary.

procedure as under the interview procedure inquiring about a calendar month. With respect to prevalence rates, as defined above, one may say that diary keeping produced a significantly lower yield of illness reports than did interviewing about "yesterday." Given such data, the problem of choice among alternate survey procedures remains complex, but a start has been made toward its solution.

If prevalence rates only are sought and no consideration other than eliminating underreporting due to errors of memory were involved, interviewing about illness "yesterday" would appear to be the method of choice. However, data on illness "yesterday" have serious limitations for general purposes, e.g., information requisite to computing incidence rates or rates based on duration of illness is not efficiently obtained. If prevalence rates alone were desired, choice of the interview on "yesterday" would depend, of course, on consideration of many factors to be discussed in subsequent reports, such as differing effects of interviewers and differing effects of responding for self alone versus responding for all members of a household. Further, the question of overreporting of "yesterday's" illness would require additional consideration.

If the purposes of a survey are such

that prevalence rates will not suffice as the expression of the level of morbidity in a population, diaries or interviews covering a longer period are indicated. Again, if no consideration other than eliminating underreporting due to errors of memory were involved, the diary would be the method of choice. In practice, many other considerations apply, including not only the factors mentioned previously as reserved for subsequent discussion, but such matters as the cost of the two procedures and differences in difficulty of editing and classifying data from them.

Compared to the interview, the diary is an expensive procedure. If a sample of the general population is chosen, initial placement of the diary requires visiting the households included in the sample so that some assurance of comprehension of instructions may be obtained. At this placement visit one also obtains "static" information on the household—ages, occupations, etc. Expense of placing the diary initially may thus approximate the cost of obtaining a fairly comprehensive interview. If any form of assistance in diary maintenance is to be offered respondents during the surveyed period, costs of this assistance must be included. Finally, if nonresponse is to be held to tolerable limits, a proportion of the available funds must be used to secure the return of the diary.

Certain other sources of difficulty are inherent in the diary method of obtaining information on illness. These range from illegibility of respondent's entries through failure to include sufficient information for adequate classification. Such difficulties do not attend in the same degree information entered on an interview schedule by a properly trained interviewer. If they exist to a marked extent in any record, the record will be relatively expensive to process and statistics based thereon relatively difficult to interpret because a larger processing error may increase the total nonsampling error.

The San Jose experience indicated that errors of memory had their greatest effect on reporting of nondisabling, unattended illness during interviews about a month. In some cases, e.g., when such illnesses can be identified through follow-up as manifestations of serious conditions, their complete reporting is of special interest. If obtaining information on such illness is a primary objective of the survey, interviews such as those used in San Jose on a one-time basis might not produce acceptable results. But in a general purpose morbidity survey, underreporting of nondisabling unattended illness in interviews might not outweigh other considerations.

If a survey is to be restricted in scope to disabling illnesses with "disabling" defined fairly objectively, our data indicate that for monthly periods the yield of reports from the diary is not higher than that from the interview. Illnesses causing hospitalization or confinement to bed at home were reported at a rate of 12 episodes per 100 person-months under both procedures. As "disabling" was less rigidly defined, rates from the two sources diverged. When illnesses causing confinement to house but not to bed were added, the diary rate was increased to 22 episodes per 100 person-months, while that for the interview became 15 per 100 person-months. When other illnesses reported as "interfering with usual activities" were included, the diary rate was 28 episodes and the interview rate 17 episodes per 100 person-months. (These rates are based on some 3,200 person-months for each of the two procedures.)

Similarly, it is of interest to compare the two data collection procedures with respect to the relationships of rates obtained for one or another population

Table 2—Illness by Diagnostic Cause Group, March–May, 1952—San Jose Household Sample Survey *

Diagnostic Cause Group †	Medically Attended Illness			Illness Not Medically Attended		
	Episodes/100 Person-months		Diary/ Interview Ratio	Episodes/100 Person-months		Diary/ Interview Ratio
	Diary [1]	Interview [1]		Diary [1]	Interview [1]	
All conditions	14.5	11.9	1.2	54.4	23.7	2.3
Injuries	2.7	2.2	1.2	5.5	2.2	2.5
Diseases and symptoms, total	12.0	9.7	1.2	49.5	21.5	2.3
Infective and parasitic diseases	0.6	0.6	1.0	1.3	1.1	1.2
Mental disorders (including "nervousness" and "headaches")	0.6	0.2	3.0	6.0	1.0	6.0
Diseases of eyes	0.3	0.2	1.5	0.5	0.2	2.5
Diseases of ear and mastoid	a	0.5	..	0.5	a	..
Arthritis, rheumatism, sciatica, etc.	0.4	0.6	0.7	1.2	0.5	2.4
Diseases of circulation	1.2	0.9	1.3	0.8	0.7	1.1
Acute respiratory infections	2.6	1.6	1.6	20.6	10.5	2.0
Other respiratory conditions	0.8	1.4	0.6	3.1	1.5	2.1
Dental disorders	0.6	0.3	2.0	0.7	0.2	3.5
Disorders of upper gastro-intestinal tract	0.3	0.3	1.0	2.9	0.6	4.8
Disorders of lower gastro-intestinal tract	0.8	0.5	1.6	1.2	0.7	1.7
Disorders of genitourinary system; childbearing	1.2	1.6	0.8	3.0	3.2	0.9
Diseases of skin and skeletal system; malformations	0.4	0.3	1.3	0.8	0.5	1.6
Other diseases and symptoms	2.1	0.8	2.6	6.8	0.6	11.3

[1] Rates are based on 3,200 person-months.

[a] Rate less than 0.05.

* See footnote "*" Table 1.

† The diagnostic cause groups used here are those in a "Short Condensed List of 15 Groups for Sickness Surveys," a proposed special list for use in presenting results of sickness surveys. International Statistical Classification categories included in each title of the list are shown in WHO/HS/Nat. Com/24, July 28, 1952, "Drafts of Five Special Condensations and Expansions of the International Statistical Classification of Diseases, Injuries and Causes of Death to Provide for Presentation in Convenient Form of Statistics of Sickness Surveys, Sickness Absenteeism, and Hospital Diagnoses." Multiple-diagnosis episodes are classified according to "primary diagnosis," i.e., the first diagnosis mentioned by the respondent.

group of special interest—for example, preschool children, or those over 65 years of age. Grouping illness data from San Jose along sex-age axes, we found that the relationship of diary rates to interview rates did not change radically until illness among those over 65 was measured. For both sexes in this age group the excess of diary rates over interview rates was quite small; a diary/interview episode rate ratio of about 1.3 was observed for all degrees of illness, from disabling and medically attended through nondisabling and non-attended. This experience indicates that the diary may have the least advantage over the interview in obtaining information on the elderly. For each of the other age-sex groups the excess of diary over interview yield was predominantly in reports of minor illness. There was little evidence that the diary elicited more complete reporting for one group than for another.

Table 2 provides additional evidence that minor illnesses, disabling or non-

disabling, make up much of the difference between diary rates and interview rates. Although the diagnostic cause groups used in the table are too comprehensive for satisfactory classification as to severity, certain categories include a lesser proportion of severe illnesses. For example, "colds, influenza, and acute upper respiratory infections," "dental disorders," and "other diseases and symptoms" are largely nonsevere. When rates for these three relatively "minor" cause groups are removed from the rates for all medically attended diseases, the remaining interview rate is slightly higher than the corresponding diary rate.

Diary/interview ratios for nonattended illness were higher in all but one cause group (diseases of circulation, etc.) than the ratios for medically attended illness. The difference between the ratios was greatest when the cause group included minor illnesses; for medically attended nervousness and headaches, the diary/interview ratio was three, while for these conditions nonattended, the ratio was six. For disorders of the upper gastrointestinal tract, the diary/interview ratio was substantially unity when the illness had been medically attended; for nonattended illnesses in this group, the ratio was about five (due almost entirely to the frequent appearance of the term "upset stomach" in diary descriptions of illness).

It has been said that the diary presents difficulties in editing and coding of data. Many of these difficulties arise because respondents do not record all the information necessary for adequate classification. This may be illustrated by our experience with use of the Manual of the International Statistical Classification of Diseases, Injuries, and Causes of Death (Sixth Revision of the International Lists of Diseases and Causes of Death) in diagnostic coding of causes of illness reported under the two procedures.

Coders were instructed to choose a code in the "Symptoms and Ill-Defined Conditions" section of this manual (codes 780–796) only when no other codable cause was given. Under these instructions, it was necessary to resort to the "symptoms and ill-defined conditions" codes for 17 per cent of episodes reported in the diary and for 5 per cent of episodes reported in the interview. Of medically attended episodes, 5 per cent of those reported in the diary were coded as "symptoms," as against 3 per cent in the interview. Of illnesses reported to have been unattended, 23 per cent were "symptoms" in the diary, 6 per cent in the interview.*

To some extent, of course, the preponderance of "symptoms" in diary obtained information is a reflection of the high proportion of minor illnesses reported there. It also reflects the fact that respondents are less likely to report the required data in the required form without an interviewer's assistance.

Summary

In household sample surveys of morbidity using an interview with a household respondent, memory losses and the respondent's lack of initial knowledge about illness of others in a household have been held to be significant sources of significant biases. A diary record of illness maintained by a household respondent should tend to obviate such bias. But the diary method of obtaining illness data can be relatively expensive from the standpoints of data collection and of editing and coding.

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* It should be noted that the "percentages coded as symptoms" cited above were those which obtained after assistance in diary keeping had been extended to certain groups of those maintaining diaries. An analysis of effects of the type and amount of assistance offered respondent will be reported subsequently.

Differences between the two methods can be evaluated in the San Jose study on the basis of reports of illness for the same periods of time, by interview and by diary, from comparable samples of households.

It was found that those maintaining diaries reported higher rates of illness for a calendar month than did those who were interviewed, whatever form of rate was used as an expression of morbidity levels. But rates for the groups maintaining diaries were close to rates for interviewed groups when medically attended illness was considered. Differences between rates for disabling illness were less than differences between rates for nondisabling illness.

The difference between diary rates and interview rates was about the same for males, females, preschool children, school children, and adults under 65. For older persons, a group of special interest to many workers, diary rates were much closer to interview rates than for other groups.

When disabling illness was classified by degree of disability (hospitalized, causing confinement to bed at home, etc.), it was seen that diary rates were identical to interview rates for more severe illnesses, the rates diverging as the severity of illness lessened.

When illness was classified into broad diagnostic cause groups, it was seen that diary/interview rate ratios were highest for minor illnesses.

Entries in the diary were more difficult to process in editing and coding of results. The proportion of entries which could not be classified satisfactorily was higher for diaries than for interviews. For example, 17 per cent of causes of illness reported in the diary were codable only as symptoms or ill-defined conditions, the ratio for the interview being 5 per cent.

Conclusion

Use of a diary to obtain information on illness during a month in household sample surveys results in higher estimates of illness rates than does use of an interview. The additional information secured pertains in large part to "minor" illnesses. Such illnesses are of special interest when they can be identified through follow-up as early manifestations of serious conditions, but this identification is not possible in a short-term, general purpose morbidity survey. Additional reporting of other illness obtained by the diary method may be insufficient to justify major additional expense in surveys designed primarily to secure information of current operational interest.

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The War Against VD Must Continue

✣ In our May issue we noted that 1954 marks the 50th anniversary of an over-all national organization to combat tuberculosis, the NTA. The present year also marks the 40th anniversary of the national organization to combat venereal disease, the ASHA.

Forty years ago the American Vigilance Association and the American Federation for Sex Hygiene merged to form the American Social Hygiene Association, with President Charles W. Eliot of Harvard as president and a group of great pioneers as leaders—Jane Addams, Cardinal James Gibbons, David Starr Jordan, and Felix Warburg, to name a few.

During two world wars and subsequent periods of consolidation the association supported the welfare and health services of military and civilian agencies and can look back today on four decades of progress in VD control. Taboos against public information about VD have largely disappeared, red-light districts are anachronisms, newer public health measures have simplified VD treatment, and legislation and law enforcement increasingly protect the public health. Through planning, research, demonstration, and field work, the ASHA has been instrumental in overcoming prejudice, indifference, and ignorance and has seen many of its social hygiene objectives accomplished.

Much, however, remains to be done and radical reductions in federal grants for the continuation of this program seriously threaten the encouraging results so far attained. The Journal of Social Hygiene for April points out that there are now over 2,000,000 individuals in the United States who need treatment for syphilis. Besides being one of the acute communicable diseases, syphilis can also cause heart trouble, diseases of the joints, mental illness, and blindness, four of the chronic health problems to which President Eisenhower has recently called attention. In the face of these alarming facts we must all agree that this is no time for our federal government to abdicate its responsibility for providing health facilities that help protect all our people. If the reduction in specific grants were balanced by a corresponding increase in the total federal grants to the states for all public health purposes, we should have less complaint. Unless a phenomenal increase in appropriations for VD purposes by the individual states should occur—a most improbable result—we can expect a marked increase in the prevalence of syphilis and gonorrhea and shall recall the present Congress as the author of a disastrous surrender to the spirochete and the gonococcus.

ASHA's present program incorporates a 10-year plan for the expansion of its educational services to teachers and school administrators; a joint effort with the

Association of State and Territorial Health Officers and the American Venereal Disease Association to call on Congress to provide adequate appropriations for VD control; continuing surveys of prostitution conditions, largely requested by the military; and partial support of a liaison office in Geneva to be set up by the International Union Against the Venereal Diseases and the Treponematoses.

This 40th year should be a time of stocktaking, of evaluation, of applying new methods to solve present problems that ASHA's original purpose may be accomplished ". . . to foster the highest standards of personal social morality."

From Certification to Pasteurization

✣ To those of us whose professional memories extend over many of the 62 years that mark the waxing and the waning of the certified milk concept, its story remains a striking example of the changes worked by technology in the public health picture. In 1892 when the Newark (N.J.) Medical Milk Commission, under Dr. Coit's inspired leadership, "certified" the first dairy, most market milk was unfit to drink. Mothers who fed raw milk to their babies helped to swell the still mounting infant death rates due to "summer complaint."

Between 1892 and 1906, 27 medical milk commissions were organized in the largest cities of the United States and, in 1907, a National Association of Milk Commissions adopted uniform national standards for dairy certification. Within a decade or two nearly 200 farms were producing certified milk. These truly shining examples of the possibility and practicability of producing clean milk—spotted across the nation—did much to stimulate the improvement in quality and safety of all market milk supplies.

Farmers, in the early century, received about three cents a quart for milk "at the farm lane" and the city dweller paid about 12 cents a quart at his doorstep. Certification doubled the delivered price, and the added cost rigidly limited the demand for this superior product. Then, in some ground-breaking demonstrations, it was made unanswerably clear that wholesome market milk could be produced under sanitary farm conditions, which would add only a cent or two to production costs, and that pasteurization could make the delivered milk safe to drink without adding materially to its distribution costs. "There is no question," wrote North prophetically in his chapter on milk in our Association's 50th Anniversary "A Half-Century of Public Health" (1921), "that pasteurization of the bulk of the milk supply has outgrown the experimental stage and has come to stay."

Today, most market milk is produced under acceptable sanitary conditions and practically all of it is pasteurized—including most certified milk—because it is good business, as well as good public health, to deliver milk that is fit to drink. To be sure, a system of farm and dairy plant inspection continues to be an essential part of public health control of milk production—and will always be needed. But the successful milk distributing organizations, zealous of their good reputations, no longer require the same surveillance to insure a safe product; that community is indeed a backward one in which wholesome milk cannot now be obtained.

One-by-one, the famous farms that thrilled the heart of the sanitarian of the twenties are modifying the more costly "certification" procedures and are joining the growing ranks of the producers of reasonably clean market milk made safe by pasteurization. To another generation the names of the pioneers, Francisco and

Walker and Gordon will mean little. But among all the nations, America's unique supply of safe, wholesome market milk will long remain a monument to the genius of these early pioneers.

Occupational Health

✢ That there has been almost a revolution in the thinking of top management concerning problems of industrial health and safety, is suggested in a bulletin [1] mentioning 10 well managed companies with excellent programs. Yet such programs are recognized as far from reaching a point where either management, labor, or the expert in health affairs can relax and observe the result with complacency. There is practically unanimous agreement that industrial health programs are desirable and the chief differences of opinion are as to how they can be best achieved.

Occupational health is an area of public health whose focal point is the employment of individuals in groups. It involves conservation and promotion of the health and effectiveness of such individuals at and through their places of employment. It utilizes a team with the professional skills of medicine, engineering (including safety), nursing, toxicology (including health physics), health education, and biostatistics.

Graduate physicians have difficulty in taking time out for special training. Medical schools are therefore facing the problem of introducing the subject of occupational medicine to medical students, many of whom may later need such knowledge. The teaching program for undergraduate medical students is of long-term importance. Every medical student should know what occupational medicine offers, what are the basic principles, and where to get more information if he needs it.

The aims for the teaching of chemists, engineers, nurses, and public health students are similar in scope to those for physicians. The cooperation among departments and schools may make joint instruction an effective way of demonstrating the teamwork necessary for sound occupational health programs.

Public health students, who include physicians, nurses, chemists, engineers, sanitarians, health educators, and hospital administrators, have received regular instruction in occupational health in some schools as a part of their basic public health training. This already has resulted in more effective health programs in certain industries, as reported by graduates, particularly in health and safety education, in nursing, and in administrative as well as medical affairs.

The teaching program for nurses at Yale and elsewhere has been particularly striking and apparent in its accomplishments. A nurse consultant, for example, in one school, has made available training for nurses in the graduate program offered by the Department of Public Health, and as part of the regular curriculum of the School of Nursing, and has given courses for selected nurses in industry. The latter effort had an enthusiastic response both locally and nationally with many nurses coming in each year for a series of evening lectures and discussions. Workshops lasting a week have been held during the summers for nurse consultants. Industrial physicians and representatives of management have learned much about teaching programs through their nurses.

Industrial institute activities have included participation in the rehabilitation program for communities where recent developments make it likely that more of

the physically handicapped will be taught to utilize their capacities in gainful employment or other productive activity. Research has been conducted in many areas.

Besides opportunities for graduate and undergraduate engineering, nursing, and medical courses, perhaps an immediate and long-range goal should be to offer continuation courses to the thousands of physicians who treat patients with occupational injury or diseases and are concerned, through physical examination programs or for other reasons, with occupational medicine on a part-time basis.

Special reference may be made to nursing as an essential element of occupational health. Two of the requisites for an industrial nurse are a liking for people and a knowledge of the breadth and scope of occupational health.[2] Not all industrial nurses need masters' degrees, but neither should they be required to function in a major field without some preparation. The basic nursing program cannot provide for complete preparation for every field, but it should prepare nurses to function in all first level positions.

Industrial nursing presents a complicated problem to the nursing educator, because so many industrial nurses work alone and are thus required to accept responsibilities beyond the usual first level position under supervision. Many nurses entering the field of industry are successful without postgraduate preparation. They have the ability to utilize basic nursing knowledge in a different environment and to augment it when necessary. These successful nurses have helped to establish the specialty of industrial nursing and they are recognized as an important part of the occupational health team. The personality of the nurse, her interest in the field, and her occupational health nursing know-how determine the success of the program.

Constructive programs for occupational health, and for public health of which it is a part, must be dynamic and adaptable to changing needs which are influenced by conditions, duties, and occasions. Concepts of working together for increased effectiveness are taking many forms for the benefit of the people concerned.

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LETTERS TO THE EDITOR

To the Editor:

Orchids to the APHA and the Executive Secretary for raising, in "The News" of April 9, the question of "What Is Public Health?" What I am putting down here is my personal opinion, not necessarily shared by the agency I serve, as you will see at the bottom of this letter.

It seems to me that the discussion of this question is long overdue and that for too long now we have been struggling, trying to stretch the term "public health" to the extent where it ceases to have much meaning at all. In order to maintain a traditional name which has become very dear to all of us, we are trying now to squeeze into it all kinds of things for which it was never meant; but this does not work too well. If we look at the activities of public health departments, of public health associations ("American" as well as "Canadian"), of public health statistics sections, and so forth, we find that they are concerned with matters of health—without any qualifying adjective. As far as our own office here is concerned,

I might mention that for some time now we have been planning to rename this section of the Bureau to "Health Statistics Section."

Let us not get into the argument here of whether we are right in talking about health when in reality we are dealing with ill health only. Also let us not discuss here whether the wide open definition of WHO should be adopted or a more restrictive one. By studying illness more and more in relation to the social environment we are certainly coming closer to the WHO definition.

Health then emerges as a state or condition of a person or of an aggregate of persons such as when speaking of the nation's health. "Public health" has always had a different meaning: instead of the condition of people, it refers to measures or activities concerned with that condition. Thus, public health has been defined as a science, art, administration, control, etc., but never in the sense of a state of health. The original connotation of public health as communicable disease control, sanitation, and so forth, has been extended gradually until its reformulation by Professor Winslow. This definition includes everything pertaining to prevention and diagnosis of disease—any disease now—including the requirement of adequate social environment. Few of what we are used to call public health agencies go so far as to concern themselves with the social machinery as a prerequisite for good health. On the other hand, many agencies go beyond the limits of prevention and diagnosis by providing curative services even for non-communicable diseases and by studying health or disease of all types.

If we wanted to define public health so as to cover everything that is being done today by health departments and other agencies, we would end up by defining public health as all matters of health, or ill health, which are beyond the individual's concern and beyond his scope to deal with, be it prevention, diagnosis, cure, or such activities as research.

In other words, public health today means all matters concerning health which can be dealt with adequately only by the community and not by the individual.

This includes communicable as well as chronic diseases and their prevention and control; it includes accidents and any other serious health problem, whereby the interpretation of "serious" is bound to vary with time and from community to community. Consequently, any health problem can become a matter for public health and, therefore, the "public" has no longer the limiting connotation it used to have. Why not drop it altogether, therefore, even if it means that stocks of letterheads will become obsolete?

R. KOHN, PH.D.
Chief, Public Health Section,
Dominion Bureau of Statistics,
Ottawa, Ont., Canada

April 20, 1954

TO THE EDITOR:

Congratulations on the new typography of the American Journal of Public Health and also on the new kind of paper which is being used. This new paper will eliminate the glare problem which sometimes was noticeable with the former paper.

The new type, with more space between the lines, is more legible.

All of these changes constitute a great improvement in readability and make the Journal easier on the eyes.

FRANKLIN M. FOOTE, M.D.,
Executive Director,
National Society for the
Prevention of Blindness,
New York, N. Y.

May 18, 1954

Second National Trichinosis Conference

L. R. DAVENPORT, D.V.M.

✣ This conference, a logical sequence to the First National Trichinosis Conference (December, 1952), which served to elucidate the epidemiology and problem of trichinosis, was designed to evaluate available control measures with the view to crystallizing a program for the control and prevention of this disease in the United States.

Recognizing the three basic epidemiological factors: garbage, swine, and pork, consideration of the various available methods or measures for the control of trichinosis was focused upon (1) the inherent effectiveness, (2) administrative and economic feasibility, (3) the scope of application, and (4) the ultimate protection or benefit to be realized from the respective methods or measures.

It was pointed out that upon the basis of the knowledge of this disease acquired over the past century various methods, such as (1) microscopic inspection of pork, (2) refrigeration of pork, (3) supervised thermal and curing processing of ready to eat pork meat products, (4) educational appeal to the public to thoroughly cook fresh, or raw, pork meats, and (5) public health effort toward the sanitary disposal of garbage all have been employed for the prevention of trichinosis. Recently, attention and emphasis have been given to the supervised heat treatment of garbage with a view to destroying the disease producing agents in the garbage fed to swine. However, despite what has been learned and done concerning trichinosis and its control, reports reveal that trichinosis continues to occur and present a significant national public health problem, consisting not only of the morbidity and mortality reported but also of the cases which because of mildness of symptoms and diagnostic difficulties may go undiagnosed and unreported. Another part of this problem, less obvious perhaps but none the less important, are the potentialities of human disease represented in the obscure infestation of swine and the human consumption of trichinae infested pork meats.

It was observed that trichinosis is a preventable disease and that the aspect of having failed to prevent this disease over the past century seemed logically to lie either in not having applied effective control methods or in not having observed effectively the methods applied. It was observed also that in addition to trichinosis such other animal-human diseases as tuberculosis, anthrax, salmonellosis, foot-and-mouth disease, and brucellosis, as well as such animal-specific diseases as hog cholera and vesicular exanthema can be transmitted through infective pork scraps present in the garbage fed to swine. It, therefore, seemed logical that the method or program for the prevention of trichinosis and the other diseases mentioned must recognize basically garbage, swine, and pork—that basically for the protection of swine the factor of infective garbage must be eliminated or, disregarding the disease dangers for swine, that the factors of infective swine and pork must be elimi-

Dr. Davenport was the Association's representative at the conference. He is chief, Section on Veterinary Public Health, Bureau of Epidemiology, State Department of Public Health, Springfield, Ill. This paper is a report on the Second National Trichinosis Conference held in Chicago, Ill., March 1, 1954.

nated for the protection of human health.

Review of the various methods and measures available for the control of this disease indicated that the refrigeration of pork was unfeasible for the reasons of (1) economics—the equipment and plant space required for the effective application of this method, and (2) the limitations of application and effectiveness in that this method could be applied only in those plants which were economically and physically able to install and maintain this procedure.

Similarly the limitations of the practice of microscopic inspection of pork were revealed in (1) the personnel and cost involved in maintaining an intensified inspection of pork, and (2) the probability that even an intensified microscopic inspection program might in instances of light infestation fail to detect trichinous pork. It was recalled that it was for these reasons that the Federal Meat Inspection Service discontinued the microscopic inspection of pork some 50 years ago.

Review of the methods for sanitary garbage disposal revealed that of the methods available the sanitary land fill appeared to be the most effective in the elimination of garbage and other wastes and the least costly to operate. Limitations of this method, however, were disclosed in the apparent legislative opposition to the procurement of conveniently accessible sanitary land fill sites.

While the feeding of garbage to swine was recognized as a method of garbage disposal, objections to this method were observed in the disease and nuisance problems presented and, though the cooking of garbage proposed a means of eliminating disease dangers, it was recognized that this treatment of garbage would not obviate the nuisance problems and unless properly applied to all garbage fed to swine would not eliminate the disease dangers for either swine or man.

Gamma-irradiation of pork was presented as a method for the prevention of trichinosis but, while the evidence presented indicated that such treatment of pork carcasses would either kill or sterilize the trichinae present in pork, limitations of this practice were seen in the cost of installation and in the economic inability of the smaller plants to install and maintain this procedure as in the instances of the refrigeration and microscopic inspection of pork.

This conference thus indicated the need for further exploration of the methods or measures which might be accepted as effective and practical for the prevention of trichinosis. Although nothing concrete resulted from this conference in the way of an effective trichinosis control formula, or program, it was gratifying to note the unanimity of interest and thought expressed by the representatives of the various professional, educational, and scientific groups toward further research, education, and the development of an effective trichinosis control program.

It was unanimously agreed by those in attendance that S. E. Gould, M.D., Wayne County Health Department, Eloise, Mich., with the support of the various cosponsoring organizations, extend the activities of the Continuing Committee of the conference in a cooperative effort toward the crystallization of an effective program for the control of this disease in the United States. Copies of the conference proceedings are available from Dr. Gould.

A COMMITTEE REPORT

Approval of Culture Media for Milk Plate Counts

Subcommittee on the Approval of Culture Media: Coordinating Committee on Laboratory Methods

✢ The Subcommittee on Approval of Culture Media held its first meeting in June, 1951. Luther A. Black, Ph.D., was appointed chairman and served in that capacity until December, 1952. Leon Buchbinder, Ph.D., was appointed chairman in November, 1953.

The formation of this subcommittee came about as a result of studies carried out under the auspices of the Subcommittee on Standard Methods for the Examination of Dairy Products, revealing that several batches of the same standard medium for the plate count offered for sale by a manufacturer differed very significantly in productivity. When the Subcommittee on the Approval of Culture Media considered these findings in the light of the fact that the Subcommittee on Standard Methods for the Examination of Dairy Products approved plate count culture media of different formulation from two manufacturers, it became apparent that some form of control of these media was necessary. It also seemed logical to the subcommittee that since the media were recommended in a publication of the Association that control should be exercised by it, though at some later date other organizations might be asked to participate in the program. The interest of the subcommittee has been limited to the milk plating agar for the time being.

Consideration was given to a program: (1) of testing batches of medium by industry itself with subsequent submission of findings to the appropriate APHA committee; (2) of spot checking of media batches in other laboratories at the instigation of the Association; and (3) of inspection of the manufacturers' plants and facilities. Informal tentative acceptance of the general plan of these proposals has been obtained from the two largest manufacturers of dehydrated media.

The subcommittee considered it advantageous to put the machinery of such a program in operation before November 1, 1953, because at that time the 10th edition of Standard Methods for the Examination of Dairy Products was to be made available. This new edition recommends the use of either of two new media for the plate count of dairy products. It was hoped that if a certification program could be established by that time, the manufacturers could price their media with the cost of the program in mind. However, events beyond the control of the subcommittee have precluded the inception of such a program at the present moment.

This report was presented before a Joint Session of the Coordinating Committee on Laboratory Methods (Subcommittee on Standard Methods for the Examination of Dairy Products) and the Laboratory Section of the American Public Health Association at the Eighty-first Annual Meeting in New York, N. Y., November 11, 1953.

In March, 1953, the subcommittee presented proposals for the certification of plate count media to the Coordinating Committee on Laboratory Methods. On the basis of these, the latter committee made certain recommendations to the Committee on Research and Standards which in turn adopted four resolutions pertaining to quantitative Standard Methods Culture Media.

First we present an abstract of the subcommittee's definite proposals and then the action taken thereon by the two higher committees. The program for actual control of the quantitative performance of culture media as evolved by the subcommittee and presented to the Coordinating Committee on Laboratory Methods is based on the following philosophy: Media to be used for quantitative work must be prepared according to definite specifications and, more importantly, must conform to some predetermined standard of productivity. In order to accomplish these ends the committee has suggested the following procedure:

Testing

The keystone of control will be the testing of batches of media by the manufacturer's laboratory and, as mentioned, the most important test is the actual productivity of each batch on appropriate samples of dairy products. To secure uniform testing and remain within the limits of a standard reference medium, the committee has prepared for the manufacturers a preliminary plan for the statistical evaluation of batches of medium. Data so obtained will be forwarded to the certifying authority for approval. An abstract of this plan prepared by John W. Fertig, Ph.D., appears in the appendix at the end of this report.

The second most important aspect of control will be the independent evaluation of batches by a laboratory or laboratories designated by the authority itself. The laboratory or laboratories will at the request of the authority test batches of media received directly from the manufacturer as well as batches offered for sale on the open market and check the adequacy of the data submitted by the manufacturer on each batch offered for sale.

It is requested that the manufacturers maintain control of the quality of ingredients by periodic use of paper chromatography or ionography, comparing the results with the chromatogram made from the standard reference formula or standard ingredients and filing as part of the record of each batch. Likewise, it is recommended that certain additional data be collected for the possible future establishment of a single medium with stabilized productivity to be used for the quantitative bacterial testing of dairy products. Other standards that might be set are the upper or lower limits for metals, such as copper, iron, and zinc; upper or lower limits for chlorides and phosphates; and limits for total nitrogen and specific nitrogeneous products. Spectographic analysis may be valuable not only as a check on the components of the medium but also to assure that metal processing equipment is of suitable composition and maintained in good condition.

Other Studies

The question of a standard reference medium has not been satisfactorily settled as yet. In comparative studies on candidate media carried out recently by the Subcommittee on Standard Methods for the Examination of Dairy Products, certain batches of TGM medium were used as standards of comparison. It is planned to begin the control program on a similar basis. Of course, it is realized that this is not an ideal situation. The subcommittee believes there are two possible solutions to this problem. The

simplest one would be the freeze-drying of acceptable batches which, if found to be stable on rehydration, could supply a practically permanent standard. If this method proves unsuccessful then recourse would have to be made to the use of a synthetic medium, a much more laborious and costly method. Preliminary work already has been done on such a medium for the testing of milk plating agar by Pelczar and Brown. Their findings which were very encouraging were confirmed by the Subcommittee on Dairy Products, but much more work on such a medium has to be done. This subcommittee has been unable to secure grants for such a study and the work, if it is found to be necessary, will have to be financed by this subcommittee or the certifying authority.

There is a surprising lack of knowledge of the effect on the stability of dehydrated media of such factors as packaging, closures, moisture content, pH, foreign material, and bacterial content. Studies on these factors should be carried out by the authority as well as by the manufacturers.

Inspection

It has been found by experience that for the complete protection of foods, for the approval of laboratories, and for the certification of biologics, visits to the places of their production or manufacture are essential. Similar inspection is recommended as part of the control procedure, since it is the only means of being reasonably certain of the nature of raw materials, the general method of preparation, the suitability of equipment and processes, and the qualifications and attitudes of the personnel concerned. Since the subcommittee does not desire to pry into any trade or process secrets, the development of inspection plans will proceed with the establishment of mutual confidence between the authority and the individual manufacturers.

Finances

It is recommended that the work of the certifying authority be financed by the sale of printed labels bearing appropriate batch identity which would be affixed by the manufacturer to each container of medium from a certified batch. It is suggested that initially a charge of $.50 per label be made. The income derived therefrom should be sufficient for the control work of the authority and should provide funds for the development of new or better control and reference media.

It is recommended that definite contracts be entered into with the manufacturers for the use of these labels. Recommended technical details of such contracts are discussed in the report to the Coordinating Committee on Laboratory Methods.

Action by Higher Committees

The CCLM "voted that the establishment of criteria for the quality of culture media specified in the two Standard Methods volumes * is a responsibility of the APHA. It further voted that explorations should be made as to appropriate means for certification of culture media prepared in accordance with Standard Methods and offered for sale.

"There was general objection to the APHA (itself) undertaking any certification program." A number of other organizations were suggested as possible certification authorities. "The committee agreed that use of brand names should be stopped as soon as possible, probably not before the 11th edition of either volume."

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* Standard Methods for the Examination of Dairy Products and Standard Methods for the Examination of Water, Sewage, and Industrial Wastes.

The Committee on Research and Standards received the recommendations of the CCLM and adopted the following resolutions:

1. That it is the sense of the Committee on Research and Standards that it is highly desirable to develop specifications or criteria for establishment of standards for the culture media specified in Standard Methods.
2. The Committee on Research and Standards encourages the Coordinating Committee on Laboratory Methods and its subcommittees to seek such standards or criteria practicable for use.
3. The Committee on Research and Standards, however, reserves its opinion as to the applicability of any method of certification, but it encourages the exploration of means for certification of media.
4. It is further recommended that in preparation of the 11th edition of Standard Methods the committees seek methods of establishing standards without reference to specific trade names.*

Appendix

A Preliminary Plan for Analyzing the Productivity of Batches of Standard Methods Plate Count Media

It is suggested that each sample of milk be tested in duplicate plates with both test batch and reference medium, using the average of the duplicates for statistical analysis. The average counts are converted to logarithms and the difference calculated as test minus reference. From a series of samples the mean difference, standard deviation, and standard error of the mean difference are calculated.

The true average difference cannot be established without exhaustive sampling, but for any number of samples should fall within two standard errors of the observed mean (the confidence range).

Because of sample-to-sample variability, it is impractical to use a sharp demarcation between acceptable and unacceptable batches, such as acceptance if the average difference is less than 5 per cent, rejection if greater than 5 per cent. To reduce the amount of sampling necessary the use of a supplementary zone from 5 per cent to 10 per cent difference is recommended. If the entire confidence range falls inside a 10 per cent difference, acceptance is indicated. If the entire confidence range falls outside a 5 per cent difference, rejection is indicated. If one end of the confidence range indicates less than a 5 per cent difference, the other more than 10 per cent, more testing is necessary to arrive at a decision. It is suggested that testing proceed in groups of 25 samples, later groups being pooled with earlier groups for purposes of redetermining the confidence range.

Leon Buchbinder, Ph.D.
Bureau of Laboratories,
City Health Department,
New York, N. Y., Chairman
Luther A. Black, Ph.D.
John W. Fertig, Ph.D.

* At the Coordinating Committee on Laboratory Methods meeting in November, 1953, the possibility of three different outside organizations acting as certifying agent was discussed. It was voted to instruct the subcommittee to work up a specific proposal, including financial arrangements and definite routines in testing, with any of the organizations willing to undertake the certification.

Credit Lines

The Journal cannot furnish copies of items mentioned in Credit Lines. Please send requests to the addresses given.

Voluntary Industrial Safety Effort

"Occupational Safety and Health in the United States of America" was prepared by the Bureau of Labor Standards, U. S. Department of Labor with the cooperation of the Public Health Service. It is being distributed abroad by the Department of State through its labor attachés chiefly as an illustration of what is called voluntarism rather than government regulation.

In this 10-page mimeographed document the history of occupational health and safety is reviewed, beginning with the organization in 1913 of the National Safety Council by a group of industrialists. Employers have found both on-the-job and off-the-job health and safety to have real economic as well as humanitarian values. Side by side with employer sponsored activities in this field labor unions also have carried on health and safety activities, notably the great health centers of the Garment Workers Union, the Sidney Hillman Health Centers, and the extensive health and hospital program of the United Mine Workers.

"The only remarkable thing about American industry's voluntary effort for safety is the foreign visitor's amazement at hearing about it or seeing it. His country is likely to depend more on law, vigorous enforcement, and engineering controls. In the United States, training and cooperation for safe work habits have developed faster than in most countries. To Americans voluntary safety effort is natural and essential. Safety is simply good business."

U. S. Department of Labor, Washington 25, D. C.

New Lasker Foundation Fact Sheets

The Lasker Foundation (Chrysler Building, New York City) continues to release Fact Sheets about selected diseases, presented in mimeographed form and combining technical information and simple presentation so that any intelligent person can understand.

Underlying this series of Fact Sheets is the assumption that public understanding of such problems promotes their solution, especially through providing public support for appropriations to aid research and to apply existing knowledge. The Fact Sheets are well documented and ought to be available for agencies concerned with the strategic approach to these disabling and killing conditions and to those dealing with the public.

Current releases, obtainable from the foundation on request, include Fact Sheets on muscular dystrophy, cerebral vascular disease, disabling conditions and rehabilitation, medical research and its results, blindness and eye diseases, the prevalence and cost of arthritis and rheumatism, cerebral palsy, multiple sclerosis, mental health, cancer, and diseases of the heart and cardiovascular-renal system.

Social Hygiene in Your Town

The American Social Hygiene Association has prepared a brace of pamphlets for the guidance of local citizens or citizen groups who either want to or should be stirred up by the social hygiene status of their communities. Volume I is "Our Town," Volume 2, "Social Hygiene Programs."

The two volumes have a wealth of detail on what to look for in sizing up the situation, what the sources of information are, what are some of the programs that might be undertaken, and how to go about making a program a truly cooperative community enterprise. Hardly anything would seem to be left out for the guidance of John and Jane Doe in Homeville. However, perhaps a less extensive presentation is required for the Does who live in villages of less than 2,500, of which there are still a great many in the United States.

American Social Hygiene Association, 1790 Broadway, New York 19, N. Y. Free.

Hearing Loss Due to Noise

A possible infringement on the health and well-being to which everyone is entitled, according to the current definition of public health, is seen in the factor of noise. Recognition of these possible harmful effects of noise is particularly acute in industry. Claims for compensation under workmen's compensation laws have already been recognized. Usable data on hearing loss due to noise exposures in industrial environments is only now becoming available.

The American Standards Association has published "The Relations of Hearing Loss to Noise Exposure," bringing together data obtained from numerous industrial sources. The graphs portraying estimates of the degree of hearing loss under varying conditions of industrial exposure and lengths of time are of particular interest to industrial hygienists, and the discussion of the general nature of hearing loss to all public health workers. American Standards Association, 70 East 45th St., New York 17, N. Y.; $1.50.

Giving Volunteers the Background

"Conversation Piece" has been initiated by the Community Service Society of New York for volunteers as an occasional summary of "short, simple facts you can talk about." Its "Conversation Piece" No. 1 gives a thumbnail history of the society's work in two areas that are currently being discussed in the New York newspapers. Its interest in housing, housing laws, and the relation of housing and health goes back to 1855 when it built the first model tenement. Later it wrote the first model tenement law and is still making recommendations to the Legislature.

As to courts, it has recently suggested a unification of all New York City courts dealing primarily with family problems. That interest stems back to 1853 when the society wrote the first state truancy law.

"Conversation Piece" would appear to be an effective way of challenging the interest of volunteers. Community Service Society, 105 E. 22nd St., New York 10, N. Y.

The Atomic Age and Health

The foreword to "Concepts of Radiological Health," a Public Health Service Manual, states that it "is addressed to public health administrators who, without special training in physics, recognize the importance of learning the elementary facts about the impact of the atomic age on health. Its purpose is twofold: to provide a concise yet elementary discussion of radiological health; and to serve as a source book for Public Health Service regional consultants in preparing short lectures and brief courses in radiological health." Even though many of us may find the concepts of ionization radiation difficult to grasp the fact remains that more and more public health workers are going to be confronted with the need of knowing what to do to protect the public from harmful radiation. Samuel C. Ingraham, II, James G. Terrell, Jr., and Dade W. Moeller have used language and illus-

trations that make the discussion intelligible even to the uninitiated. Gov. Ptg. Office, Washington 25, D. C.; 45 cents.

Community Organization Experiment

"An Experiment in Informal Community Organization" (Progress Report 1323) is the title of a three-page mimeographed summary of how technics were developed for rural community improvement by using the organizations and agencies already existing in a Texas town, identified only as community "A." Two surveys were conducted, one concerned with the social and economic resources of the area, another to determine the opinions and attitudes of the community leaders. The dissemination of the survey data resulted in all sorts of community improvements—a public library, more grade A dairies, a bond issue for improving the sewage system, and many others. The summary was prepared by the catalyst of the experiment, Dan R. Davis, associate professor, Department of Agricultural Economics and Sociology, Texas A & M College, from whom it is available. College Station, Tex.

British Health Information Digest

The Health Information Digest began a half-yearly publication in January, 1954. Published by the Central Council for Health Education of London, it sets out to "offer a unique service to busy readers who lack time and facilities for research yet must be well informed on all aspects of modern health problems. . . . Topics are selected in fields where progress or change are imminent." Extracts from original papers, official reports, statistical material, and correspondence columns of British and international journals make up the digest.

The first issue dealt with the "Fluoridation of Public Water Supplies and with Mental Deficiency." Of 33 digests on fluoridation, 15 appeared originally in United States technical journals, eight of them in the American Journal of Public Health. Central Council for Health Education, Tavistock House, London, W.C. 1.

Health of the School Child

In 1950 the Oklahoma Advisory Health Council, with a membership of 25 state organizations, established a committee on school health. This committee has had an annual conference on "The Health of the School Child." The report of the third such conference is now available. It promises to be useful for other groups planning, for example, how to make the recess period educational, how to make the school lunch safe and educational as well as nutritious, how to develop pupil responsibility, the place of mental health, family life, and sex education in the school curriculum, among other subjects.

The Oklahoma Advisory Health Council, North Campus, Norman; 35 cents.

Annual Reports

"National Committee on Alcoholism: Annual Report, 1952–1953" details what this organization is doing by way of "the prevention and reduction of alcoholism through education, rehabilitation, and community services." It estimates that there are 4,000,000 victims of the disease alcoholism. The committee works toward universal enlightened understanding of alcoholism as a treatable disease, a nation-wide network of alcoholism information centers and an active committee in every community, adequate clinical diagnostic and treatment facilities and short-term treatment in general hospitals, continuing research, modern teaching on alcoholism in schools and colleges, and coordination of all efforts for a rounded national program.

Among the special recommendations

of the report is an Alcoholism Information Center in New York City, the lack of which superimposes meeting local needs upon the organization's national task. Mrs. Marty Mann is executive director. Its offices are in the New York Academy of Medicine Building, 2 East 103rd St., New York 29, N. Y.

"Scott County Health Department, Annual Report 1953," has an appealing red, white, and black cover and a number of other touches that make one read it despite the fact that it is mimeographed, its charts are amateurish, and its line drawings badly reproduced. But it is so simply and pleasingly written, with sly bits of humor in the drawings, that its total effect, at least for one reader, is more effective than many more ambitious jobs. At any rate, it is interesting to see that this Missouri county of 35,000 with a per capita health expenditure of 95 cents uses ingenuity rather than money primarily to prepare an annual report. It is also significant that the first item in the report is an acknowledgement to the county doctors, to women's clubs, PTA, teachers, and all other citizens and groups who have shared in the work and "made the Health Department possible." Thelma C. Buckthorpe, M.D., is the health officer.

French Public Health Society Born

The French Society of Preventive and Social Medicine was created at a general assembly on September 19, 1953. Its secretary general is Dr. Courbaire de Marcillat, regional consultant physician of the Social Security System. Its offices are at 18, Place de Jaude, Cleremont-Ferrand.

The society currently includes seven sections, medical inspectors of public health, school and university physicians, social security and agricultural social assurance consultant physicians, industrial hygiene, physicians of national enterprises, psychiatric hospital physicians, and physicians in public tuberculosis hospitals and in tuberculosis dispensaries.

The stated purposes of the society are to develop friendly cooperation among the physicians in the various branches of preventive and social medicine, to promote through exchange of views, scientific meetings, and appropriate conferences a body of public health principles and their application, and make available for common use the results of the work, research, and experience of everyone.

Members of the American Public Health Association are invited to the next scientific session of the society in Vichy, September 3–6, 1954.

Books and Reports

All reviews are prepared on invitation. Unsolicited reviews cannot be accepted.

Official History of the Canadian Medical Services 1939–1945. Vol. II Clinical Subjects—Edited by W. R. Feasby. Ottawa, Canada: Edmond Cloutier, Queens Printer and Controller of Stationery, 1953. 537 pp. Price, $5.00.

This volume is a compilation of reports from various doctors and groups of doctors covering the many different aspects of the medical activities carried out, and findings of the medical services of the three branches of the armed services of Canada in World War II. In brief it could be described as the means by which the health of the armed services was promoted and maintained during the war period.

In some 35 chapters, beginning with the prevention and treatment of the common acute communicable diseases and ending with the applicable vital statistics, the volume deals with a multitude of conditions. Diseases associated with the various systems (gastrointestinal, respiratory, etc.) most prevalent in the troops are described. The many and varied surgical procedures pertaining to systems (skeletal, urogenital, etc.) in dealing with war wounds are outlined. In addition there is a special section discussing inguinal hernia repair to enable personnel to enroll in combatant forces. Application of the various specialties, such as radiology, anesthesiology, etc., to enlisted personnel in an integrated program, together with general medical care, provides highly informative material. In this day of thinking of the provision of more effective care for the total population this gives considerable food for thought.

Because of the importance of mental health and the high rate of incidence of psychiatric disability, the chapter on "Neurology and Psychiatry" will prove an interesting study. In this period of stress and strain about the cold war or uncertain socioeconomic conditions, the benefits of the wartime experience in this field should prove helpful to all practitioners of medicine. It indicates the value of early and prompt treatment of psychiatric disorders.

The volume brings out very clearly the advances in diagnosis and treatment. In many instances, using the situation at the end of World War I as a basis, the progress in many fields is described during the peace between wars, along with additions and modification of medical knowledge occurring in the second World War.

In the final chapters dealing with biostatistics of the services there is ample illustration of the benefits to be gained by good medical bookkeeping with a periodic balancing and study of the facts obtained.

This book, covering as it does such a wide range of subjects, is of interest to practitioners of all branches of medicine, both preventive and therapeutic. As stated in the final paragraph of the chapter on shock and transfusion (p. 295), "Studies in war can bring benefits to peace. They can also prepare the medical services for the repetition of grim circumstances when experience will pay in lives saved. Should such circumstances arrive, knowledge of the treatment of casualties is now such that it can be concisely taught and expertly practised."

STEWART MURRAY

The Psychiatrist: His Training and Development. Report of the 1952 Conference on Psychiatric Education, Cornell University, Ithaca, N. Y., June 19–25, 1952. Washington, D. C.: American Psychiatric Association (1785 Massachusetts Avenue, N.W.), 1953. 214 pp. Price, $2.50.

This report of the 1952 Conference on Psychiatric Education, held at Cornell University, Ithaca, N. Y., is probably the most important book yet published on the practical details of residency training in psychiatry. The conference, organized and conducted by the American Psychiatric Association and the Association of American Medical Colleges, brought together 86 selected persons, mostly professors or teachers of psychiatry, with a liberal sprinkling of professors of public health, preventive medicine, internal medicine, neurology, neuropathology, psychology, and pediatrics, deans of medical schools, and administrators of hospitals and community programs.

Preparatory to the meeting, 10 "planning commissions" collected and condensed material on various aspects of residency training for presentation to the plenary sessions of the conference and discussion by smaller subgroups. This book is a summary of the various discussions, edited by John C. Whitehorn, M.D., chairman, Francis J. Braceland, M.D., Vernon W. Lippard, M.D., and William Malamud, M.D. From his own experience with the 1952 Ithaca Conference (on undergraduate psychiatric education), the reviewer is well aware of the editorial difficulties involved in putting together material gleaned not only from formal conferences but also from the innumerable informal conferences which occupied most of the waking hours between the scheduled meetings. This condensation is noteworthy in its completeness and objectivity.

Of special interest are those sections dealing with such controversial topics as the "Role of Psychoanalysis in Residency Training" and the tentative conclusions of the conference on this subject are already being widely quoted. It may even be hoped that the result will be an acceleration in the existing trend toward closer integration of university and psychoanalytic teaching. Earlier inclusion of psychiatric experience with children in the resident's training and increased emphasis on forensic psychiatry, industrial psychiatry, and the psychiatric aspects of public health are also encouraged by the report.

The book is attractively bound and printed and easily read; the style is lucid, conveying a surprising amount of information for so condensed a volume. It could profitably be made required reading for anyone interested in or concerned with residency training in psychiatry. C. H. HARDIN BRANCH

Handbook of Probability and Statistics with Tables—By Richard Stevens Burington and Donald Curtis May, Jr. Sandusky, Ohio: Handbook Publishers, 1953. 332 pp. Price, $4.50.

The well trained mathematician seeking a quick overview of some of the mathematics of statistics will probably appreciate this book. It is not intended to be a guide for the practical statistician, except as he may wish to turn to such a source for some mathematical point elusive to his memory. Theorems are generally stated and illustrations of their application may be provided, but proof of the theorem is not included.

Symbols are sometimes used well in advance of their definition. There is lack of clarity concerning the distinction between unidimensional and area representations of frequency in graphs of discrete and continuous frequency distributions. Some elementary terms are

used in senses disturbingly different from those established in practice.

There is room for a compact, well bound handbook of tables specially designed for the statistician. This well printed book of small size raised hopes in the reviewer that perhaps such had been provided. But only 63 pages are given over to tables in the assembly referred to as the second part of the book. And there are notable omissions here. Many of the brief tabulations scattered through the first part are quite useful, but there is no really serviceable index to these. Statisticians usually will not be satisfied that this book is their meat.

ALAN E. TRELOAR

Attitudes Toward Giving—By F. Emerson Andrews. New York: Russell Sage Foundation (505 Park Avenue), 1953. 145 pp. Price, $2.00.

What makes people give to religious and philanthropic causes is a subject which any institution or organization raising funds from the general public studies constantly. Every letter, every piece of printed material, every personal appeal starts with the fundamental questions of what approach will quicken the desire to give. Mr. Andrews attempts to throw light on this problem of motives.

Although Mr. Andrews bases his book on only 91 test interviews—a very small sample to be sure—he has collected opinions and ideas which would probably be the same even if a much larger group had been interviewed. Mr. Andrews himself states: "They do not add up to scientific conclusions."

The interviews depended upon the skillful use of questions. Each interview lasted about one hour and a half. Questions were seldom directed pointedly at motives, but an effort was made in a friendly informal atmosphere to secure frank and very personal reactions to questions which would uncover motives.

One thing which the book does is to corroborate opinions which many "fund raisers" have had, namely, that the education of givers is most important, that the religious and emotional appeal is still the strongest motive for giving, and that a personal call far exceeds other methods of raising funds. There is clear evidence, too, that much giving comes about through friendship rather than from the merits of the appeal and those who work in an organization as volunteers, or hold offices, have higher motives for giving than others. Many of those interviewed resented today's innumerable appeals, but many of those who objected responded to few appeals and with negligible contributions. The author also has reported frank opinions of what some people really think of particular social and health agencies. Mr. Andrews has been a staff member of the Russell Sage Foundation since 1928.

GEORGE J. HEIDT

The Motion of the Heart—By Blake Cabot. New York: Harper (49 East 33rd St.), 1954. 173 pp. Price, $2.00.

It begins, "This is the story of research on the heart"—and before the reader knows it he is deeply engrossed in the awe-inspiring puzzle of what makes the heart tick and why it fails at last. Dealing exclusively with the circulatory system, the book is really an exposition of the spirit and practice of research, defined by one laconic worker as "scratching where it itches," and by another as highway building in which the trail blazer and the more obscure brush hackers and road builders play their parts.

Encouraged by the American Heart Association, Cabot, not a physician, undertook to explain the many research studies of the complex physiology of the heart and blood vessels now under way. It meant visiting hundreds of scientists and technicians, seeing with

his own eyes the capillary circulation, toying with the ultracentrifuge, following, fluoroscopically, the passage of a catheter into the heart chamber, attending operations on "blue babies," and delving into the writings of Galen, Harvey, and the rest. All this he interprets in language comprehensible to the layman (although it is not easy reading), and yet he meets the demands of the research workers who are notoriously glamour-shy and sticklers for accuracy. The format is a model of neat, beautiful, small bookmaking.

H. E. KLEINSCHMIDT

Advances in the Control of Zoonoses. WHO/FAO Seminar on Zoonoses November, 1952. New York: Columbia University Press (2960 Broadway), 1953. 275 pp. Price, $3.00.

The term "zoonoses" is relatively new in veterinary medicine and public health, denoting those diseases of animals naturally transmissible to man. This monograph considers bovine tuberculosis, brucellosis, leptospirosis, Q-fever, and rabies—five of more than 80 animal-human diseases listed in Annex I of the "Joint WHO/FAO Expert Group on Zoonoses Report" (May, 1951).

The consideration of these five diseases embraces diagnosis, epidemiology, and control, emphasizing such aspects as prevalence in animals and man, recently developed diagnostic technics, prophylaxis, and research.

It is interesting that this book discusses upon the basis of long European experience and study five diseases which present current veterinary medical and public health problems in the United States, and one is impressed with the contribution the various European scientists have made to our understanding and prevention of these diseases.

A most stimulating feature of this monograph is the joint medical and veterinary consideration of animal-human disease problems since, as is pointed out, the effective prevention of the zoonoses lies in the utilization of the combined resources of medical, public health, and agricultural groups.

Though fundamentally scientific, the information presented in this book is comprehensive and clear. All individuals and groups sharing interest and responsibility in the control of the zoonoses will find this book a most informative and helpful reference.

L. R. DAVENPORT

Social Work Year Book 1954—American Association of Social Workers; Russell H. Kurtz, Editor (12th ed.). New York: American Book-Stratford Press, Inc. (75 Varick St.), 1953. 703 pp. Price, $6.00.

This 12th issue of the important reference book in the series begun by Russell Sage Foundation in 1929 upholds the high standards of presentation and provides a wealth of essential information concerning the lots in the big field of human welfare including health.

Carefully selected contributors for 72 topical articles give up-to-date descriptions of organized activities. A directory section lists 520 national, international, and Canadian agencies, with a statement of purpose and activities. Bibliographies are appended to each article and a list of periodicals appears in an appendix. An advisory committee from several professional associations and the field at large included Reginald M. Atwater, M.D., while the articles on public health, public health education, and public health nursing, to give only illustrations, were prepared by the well known authors: John J. Wright, Clair E. Turner, and Ruth Fisher, respectively.

Among the highlights are developments which have occurred with respect to the aging, alcoholism, the blind, chronic illness, the crippled, the deaf

and hard of hearing, social security, mental health, financing, and numerous areas in governmental and voluntary social work. Full of authoritative information, the book will continue as a useful and up-to-date reference text for libraries, agencies, students, and others engaged in many professions and occupations in various parts of the world.

IRA V. HISCOCK

Living Your Later Years—By Kenneth Walker. New York: Oxford University Press (114 Fifth Avenue) 1954. 196 pp. Price, $3.50.

If a man is a fool or his own physician at 40, as we used to be told, it is by the practice of common sense and a modicum of self-study. Thus it is in this friendly collection of quotations from the literature of the centuries and the assembly of matter-of-fact opinions of a quasi-sociomedical significance.

The audience addressed is of the elderly sophisticated and the well-to-do, a population unit large enough in the United States and in the main in the countries of western culture to justify this, the most recent of a long series of books intended to inform, amuse, guide, and prepare eldering men and women for the years so generously given them since the turn of this century.

The book is brief and easy to hold. The 11 chapters offer no novelties of thought, no panaceas of diet or drugs. We are briefed on the problem of old age, the body and tissue changes, rejuvenation, and on man's span of life in the first five chapters, some 67 pages. There follow introductions to the psychological changes in old age, the treatment and philosophy, a religious view, old age and society, and ways of solving the old-age problem. The author seems to have undue optimism as to the resources of medicine against arteriosclerosis, and a cheery confidence in the safety of alcohol and tobacco, short of gross abuse. He warns against a dread of approaching old age and would substitute confidence in comfort if complicating illnesses are quickly managed.

Except for the urbanity of expression and the easy flow of language, the book offers little to devotees of medical science and the arts of the associated professions.

The author has doubtless made many patients thoughtful, content, and happy. His words will win elders to a gentle philosophy without any sting in it.

HAVEN EMERSON

The Juvenile Offender—By Clyde B. Vedder. Garden City, Long Island, N. Y.: Doubleday, 1954. 510 pp. Price, $6.00.

This book is intended "to supplement a textbook in the field . . . (and for) a wide clientele among practitioners in the fields of psychiatry, social work, and education." The coverage is broad, ranging from the meaning, extent, and causes of deliquency through special personality and behavior problems, on to discussion of the several institutional means of treating the delinquent, and ending with a chapter on the community's responsibility for preventive work.

From the standpoint of the potential reader whose professional interests lie in the field of health, this book has a number of shortcomings. Health—and its counterpart, illness—appear to the author to involve only the venereal diseases. Physical handicaps (e.g., conspicuous hairlessness and other physiological stigmata) are mentioned as inducing special psychological difficulties, but the relation of somatic and psychosomatic disturbances to the aberrant behavior of the delinquent is treated only by weak inference. More important, to this reviewer, is the author's limited view of "community responsibility." The book seems relatively innocent of the fact that public health programs increasingly meet im-

portant physical and mental health needs of the individual and his family in the very areas in which social needs are greatest, and that the integration of these services with other community services is a sine qua non for complete community action.

EARL LOMON KOOS

Community Health Action. A Study of Community Contrast—By Paul A. Miller and Associates. East Lansing, Mich.: Michigan State College Press, 1953. 192 pp. Price, $3.00.

The growth of public health as a social movement has moved through two phases: the development of a body of knowledge as to the nature of health and disease and, based upon this, the development of organized programs for the improvement of health and reduction of disease. A third phase is emerging in which the nature of community action necessary to effect such programs is being analyzed and organized in definitive terms. In this current stage the technics of social science research contribute to the analysis of what occurs in the process of cooperation and community action.

This book deals with the structure of the American community and the way in which it functions in solving particular problems. It is of particular significance to public health workers in that it provides a comparative study of community action toward identical community goals—developing health facilities—and relates the community scene to the larger systems of state, region, and nation. It uses the decision-making process as the framework for considering the data. The authors emphasize the interdisciplinary effort in developing this and other reports.

A section entitled "A Note on Procedure" holds interest for those in the public health field who would like to know more of the research procedures of the social scientists. In terms of the sociological character of the problem the authors proceed with a review of the pertinent literature, with the selection and limitation of the field of inquiry, and with the development of a method for obtaining and analyzing the data.

The consideration of community action as a sequence of happenings is particularly incisive: (1) prior community situations, (2) initiation of action, (3) organization of sponsorship, and (4) community organization methods, or the technics by which resources are mobilized.

The descriptions of the decision-making process, of decision-making capacities of authority and influence within the community, and of the decision-making operations receive careful treatment. These factors are fully studied in five projects selected for intensive investigation in New York, Indiana, Alabama, Wyoming, and California.

Despite the detailed analytical work, accent throughout is on the community and its resources for community action, rather than on health alone. Perhaps because of this emphasis, the book will be useful to the public health worker in viewing the functioning of the total community in providing specific health facilities. The perspective is excellent; the details are concise.

LOUISA ESKRIDGE HAAS

Advances in Virus Research—Edited by Kenneth M. Smith and Max A. Lauffer. Vol. I. New York: Academic Press (125 East 23rd St.), 1953. 362 pp. Price, $8.00.

This book is a collection of eight chapters on widely varying subjects, ranging from transmission of plant viruses by Cicadellidae to poliomyelitis, each written by different individuals. The purpose of such a collection, as stated by the editors, is to focus interest on the virus rather than the disease. In so far as viruses lend themselves to

fundamental investigative methods of biochemists, biophysicists, serologists, geneticists, and others, this is an admirable objective. However, the reviewer found the collection quite confusing. Some chapters, covering the subjects of properties of bacteriophages, purification and properties of animal viruses, virus nucleic acids, and poliomyelitis, were carefully written and adhered to the object of the book, namely, to present important, recent advances of the field in short, concise, summary fashion with sufficient experimental detail for the reader interested in a thorough understanding of the subject. However, in reading other chapters, the reviewer floundered in a long welter of confusing technical details, physical and chemical data, and worst of all, attempts to present everything ever reported on the subject. In spite of these objections, however, there is much of interest in the chapters on interactions between viruses and virus strains, insect viruses, transmission of plant viruses, and influenza if the reader is patient or happens to be acquainted with the field.

The purpose of this book and the objectives of the editors are unquestionably fine; it is the hope of this reviewer that future volumes will be better integrated as to content and style of writing. GORDON C. BROWN

Modern Concepts of Leprosy. American Lecture Series Publication No. 145—By Harry L. Arnold, Jr. Springfield, Ill.: Thomas (301–327 East Lawrence Avenue), 1953. Price, $3.75.

This small volume is far superior to many larger monographs on leprosy. Designed for general physicians, it will be useful to all interested in leprosy and other mycobacterial diseases. The author has sifted out nonessentials, arranged his material well, and drawn logical and pertinent conclusions. In the section on "Prevention" he is perhaps unrealistic in assuming that "standard practice" in most countries where leprosy is endemic is isolation of the bacteriologically positive. Actually, there are few such countries where this is practicable. At present the hope for control lies chiefly in provision of sulfone treatment for lepromatous cases at dispensaries or wherever they can be reached and in the search for more actively bactericidal drugs. Mention is made of the possible value of BCG as an active immunizing agent in children, but this remains to be demonstrated by field trial. Practically all patients with the lepromatous type are lepromin-negative. Fernandez has shown that BCG will convert healthy lepromin-negative individuals to positive JAMES A. DOULL

Aviation Toxicology—Prepared under the direction of the Committee on Aviation Toxicology, Aero Medical Association. New York: Blakiston (575 Madison Ave), 1953. 120 pp. Price, $4.00.

The extraordinary demands for alertness and sound judgment which are met with in aircraft operation justify a specialized consideration of toxicology for this activity. Also, the unique circumstances of hypoxia encountered raise questions which are not dealt with in other industrial situations.

This small volume brings together the essential information which a physician in the air transport industry should have at his fingertips. There will be few occasions on which he will be unable to find an approximate solution to any problem which arises, sufficient to serve as a basis for starting corrective action, and an adequate suggestion of references to permit him to begin a more definitive study.

The information appears to be accurate and is concisely and lucidly presented. RODNEY R. BEARD

Community Power Structure. A Study of Decision Makers—By Floyd Hunter. Chapel Hill, N. C.: University of North Carolina Press, 1953. xiv–297 pp. Price, $5.00.

Health workers are today agreed that the public health is a product of community action. Obviously, then, it is essential for such workers to have the fullest possible knowledge about the community commensurate with their professional needs. Furthermore, this knowledge should be as realistic as possible—the community should be seen as it is, not as one would like it to be.

An important contribution to a realistic view of the community is Hunter's study of the power of structure of an American city. While this is not a complete study of a community, it is focused on the central point of community structure and function: Who runs the community? How is this done? The author shows that the real power in Regional City, as he calls the community which he studied, is exercised by a small group, composed largely of businessmen. These men actually formulate community policy, which is then channeled down to institutional and associational groups through which policy is executed. The decision-making activities of the group are not known to the public, yet, these men are responsible for what is done or not done in the community.

The Negro community within Regional City is studied for its own power structure, as well as in its complex relationships to the larger community. No Negroes are called upon to contribute to top policy-making in the community at large. They participate in the power structure chiefly through voting rights and in civic association groups through more widespread acceptance of participation in them.

Health and welfare problems and the agencies concerned with them are subject to the beliefs and actions of the decision makers. Generally, matters relating to health and welfare are considered as belonging in the category of "lesser" policy. The professional workers concerned with health and welfare in Regional City are employed by and subordinate to the upper structure of power. In most cases they work with and are dedicated to improving the condition of those members of the community in the lower income and underprivileged groups. At the same time they must also keep in mind the interests of those who employ them.

These are simply a few of the highlights in this dissection of the power structure of a contemporary American community. There are many other aspects which will arouse the interest of public health workers who operate in the community. Much that is presented in the study of Regional City is not new, but the data are presented vigorously and systematically, so that one cannot avoid the central issue. If the problems which confront individuals and groups in a community are to be dealt with democratically and effectively, can this be done when the citizens are not even aware of who the real leaders of the community are and how they are selected? GEORGE ROSEN

Child Training and Personality: A Cross-Cultural Study—By John W. M. Whiting and Irvin L. Child, New Haven, Conn.: Yale University Press, 1953. 353 pp. Price, $5.00.

This volume reports the results of a detailed comparative study of child rearing practices in many primitive societies and their influences upon the personality of adults in each society. The study has been conducted at the Institute of Human Relations at Yale University where data concerning primitive societies and contemporary societies have been systematically collected in

recent years so that such cross-cultural comparative studies can be made. Drs. Whiting and Child carry the reader with them through each step of their study, beginning with the statement of the questions to be answered and the development of a frame of reference and a set of concepts which will enable the diverse descriptive material collected in anthropological field studies to be dealt with uniformly. Through the ingenious use of rating systems and reliability checks, the authors have to a large extent overcome one difficulty inherent in retrospective research, namely, that the basic data have not been uniformly and systematically collected for the purpose which the authors are using it.

The authors have used concepts from general behavior theory to test certain assumptions concerning child rearing and personality development which have for the most part been developed from clinical experience with psychiatric patients. The assumptions are largely contained in psychoanalytic theory of emotional growth and development. The authors have delineated five systems of behavior common to all infants and children and have rated them for each society studied with respect to (1) initial indulgence of the society toward behavioral manifestation pertinent to each system, and (2) the severity of socialization enforced by each society, as the infant and child develops and grows, finally to become an adult member of the society. The five systems of behavior are (1) oral behavior, (2) anal behavior, (3) sexual behavior, (4) dependence behavior, and (5) aggressive behavior. Examples of initial indulgence would be "demand feeding," minimal concern over soiling and wetting, and little concern over autoeroticism and sex play among children. Severity of socialization includes such items as early and enforced weaning, early bowel training, punitive attitudes toward soiling, wetting, sex play, aggressive behavior, etc.

The measures of significant adult personality variables have been derived from two sources concerning which data are available from many primitive societies. These are (1) explanations of illness, and (2) therapeutic practices.

Ratings of 75 societies concerning child rearing practices, theories of cause of illness, and therapeutic practices have been made. The authors then use correlation technics to test many hypotheses concerning relationships between child rearing practices and personality development.

Startling findings do not appear in the book. Some of our current concepts concerning relationship between child rearing practices and personality development are upheld by the cross-cultural studies; others are not. The volume is highly recommended to the serious student. It is not easy reading. The significance of the results seems overshadowed by the concern over theoretical and methodological problems which presented themselves to the authors as the research was developed. The careful reader will be highly rewarded by new insights into the complexities of social science research and may be challenged to further develop social science research as it is applied to the study of sociocultural factors in health and disease.

WARREN T. VAUGHAN, JR.

Books Received

Listing in this column acknowledges the receipt of books and our appreciation to the senders. Space and the interests of readers will permit review of some, but not all, of the books listed.

ADVANCES IN CANCER RESEARCH. Vol. II. Edited by Jesse P. Greenstein and Alexander Haddow. New York: Academic Press, 1954. 530 pp. Price, $11.00.

ANNUAL SURVEY OF PSYCHOANALYSIS, THE. Vol. II. Edited by John Frosch, et al. New York: International Universities Press, 1954. 724 pp. Price, $10.00.

CAUSES AND TREATMENT OF BACKWARDNESS, THE. Sir Cyril Burt. New York: Philosophical Library, 1954. 128 pp. Price, $3.75.

CURRICULUM FOR SCHOOLS OF MEDICAL TECHNOLOGY, A. Edited by Israel Davidsohn and Kurt Stern (3rd ed.). Muncie, Ind.: Registry of Medical Technologists of the American Society of Clinical Pathologists, 1954. 122 pp.

EUROPEAN CONFERENCE ON HEALTH EDUCATION OF THE PUBLIC. LONDON, ENGLAND, APRIL 10–18, 1953. Geneva, Switzerland: World Health Organization, 1953. 58 pp. Not for sale.

FIFTY YEARS OF MEDICINE. AN EXPANDED VERSION OF THE HARBEN LECTURES, ROYAL INSTITUTE OF PUBLIC HEALTH AND HYGIENE, DECEMBER 1952. Lord Horder. New York: Philosophical Library, 1954. 70 pp. Price, $2.50.

GROUP WORK IN THE INSTITUTION. Gisela Konopka. New York: Morrow, 1954. 304 pp. Price, $4.50.

GUIDANCE THROUGH DRAMA. A SERIES OF SIX TESTED AND APPROVED PLAYS TO ILLUMINATE FAMILY, CHILD, SCHOOL PROBLEMS. M. Jerry Weiss. New York: Morrow, 1954. 333 pp. Price, $3.95.

HANDBOOK OF CARDIOLOGY FOR NURSES. Walter Modell and Doris Schwartz (2nd ed.). New York: Springer, 1954. 320 pp. Price, $4.25.

HANDBOOK OF PEST CONTROL. Arnold Mallis. New York: MacNair-Dorland, 1954. 1068 pp. Price, $9.25.

HISTOPATHOLOGIC TECHNIC AND PRACTICAL HISTOCHEMISTRY. R. D. Lillie. New York: Blakiston, 1954. 501 pp. Price, $7.50.

HOW TO WORK WITH YOUR BOARD AND COMMITTEES. Louis H. Blumenhal. New York: Association Press, 1954. 64 pp. Price, $1.00.

INITIAL INTERVIEW IN PSYCHIATRIC PRACTICE WITH PHONOGRAPH RECORDS. Merton Gill; Richard Newman; and Frederick C. Redlich. New York: International Universities Press, 1954. 423 pp. Price, $6.00. Records sold at cost $4.60.

MEANING OF SOCIAL MEDICINE, THE. Iago Galdston. Cambridge, Mass.: Harvard University Press, 1954. 137 pp. Price, $2.75.

NUTRITION REVIEWS. Vol. II, Numbers 1–12, January-December, 1953. New York: Nutrition Foundation, 1953. 396 pp.

POPULATION STATISTICS AND THEIR COMPILATION. Hugh H. Wolfenden. Chicago, Ill.: University of Chicago Press, 1954. 258 pp. Price, $7.50.

PSYCHOLOGY, THE NURSE AND THE PATIENT. Doris M. Odlum (2nd ed.). New York: Philosophical Library, 1954. 168 pp. Price, $4.75.

SURVEY OF FOOD AND NUTRITION RESEARCH IN THE UNITED STATES OF AMERICA 1952–1953. Prepared by Food and Nutrition Board, National Research Council. Washington, D. C.: Gov. Ptg. Office, 1954. 372 pp. Price, $1.75.

TREATMENT OF THE DELINQUENT ADOLESCENT. GROUP AND INDIVIDUAL THERAPY WITH PARENT AND CHILD. Harris B. Peck and Virginia Bellsmith. New York: Family Service Association of America, 1954. 147 pp. Price, $2.00.

VETERANS ADMINISTRATION TECHNICAL BULLETINS. Series 10, Vol. VI, 1952–1953. Washington, D. C.: Veterans Administration, Department of Medicine and Surgery, 1954. 44 pp. Not for sale, a few copies are available for medical libraries upon request.

WILLIAM H. WELCH AND THE RISE OF MODERN MEDICINE. Donald Fleming. Boston, Mass.: Little, Brown, 1954. 216 pp. Price, $3.00.

A Selected Public Health Bibliography with Annotations

What Kills Them?—A table you will want to study reveals, state by state, the death rates from different kinds of accidents. It suggests immediately the need to tailor safety programs to the cloth of existing hazards, which are by no means the same everywhere.

ANON. Where Fatal Accidents Are Most Frequent. Statist. Bull. Metrop. Life Insur. Co. 35, 4:8 (Apr.), 1954.

When to Shelve — Arguments for both fixed and flexible retirement ages are examined usefully. The inquiry seems a little more concerned with the employer's problems than the employee's, but we have heard a lot about the impact of retirement on the individual, so this balancing consideration of the old man's role in industry appears justified.

BENNETT, G. K. A Psychologist's View of Retirement Problems. Indust. Med. & Surg. 23, 5:209 (May), 1954.

"One Health"—The section of this inclusive survey subtitled "Public Health and Mental Health" will prove of interest to all who have any concern with "next steps" in public health administration. In it the researcher discusses the question of which agency shall undertake the preventive aspects of mental hygiene. He offers, as his measured opinion, that the mental health, not public health, authorities should do the job.

FULLER, R. G. A Study of Administration of State Psychiatric Services. Ment. Hyg. 38, 2:177 (Apr.), 1954.

Courageous Convictions — If you like a stimulating, "fighting" presidential address then by all means look up this discussion of the changing nature of (Br.) school medical services. It was delivered by a lady who has been out there, knee-deep in practical, day-to-day child health chores for 22 years. We could do with some persuasive pleaders like this protagonist on our side of the pond.

GILCHRIST, M. L. The Changing Face of School Medicine. Pub. Health 67, 8:124 (May), 1954.

Still Elusive Colds — Information about the agents that cause the common cold accumulate with snail-like slowness. Some questions that bothered researchers two decades ago remain with them today. How are colds transmitted? Is there a carrier state? Does virus remain in tissues as the herpes simplex virus does? Does immunity develop after an attack? Is there one agent or several? If you are sure of the answers to all these questions, then you know more than the writer of this review paper has been able to dig up.

GOHD, R. S. The Common Cold. New England J. Med. 250, 16:687 (Apr. 22), 1954.

To Whack Crack-Pots With!—Here is an invaluable statistical club to keep handy behind the door. Mortality statistics from cities having water supplies with 7 ppm of fluorine (or more) are compared with similar statistics from cities having 2 ppm (or less). There is no significant difference in death rates from "all causes," or in those from heart disease, cancer, intercranial lesions, nephritis, or cirrhosis of the liver.

HAGAN, T. L., et al. Waterborne Fluorides and Mortality. Pub. Health Rep. 69, 5:450 (May), 1954.

Misery's Partners—Three years of experience in the application of the group method to weight reduction impresses these reporters with its general value, though they think the most productive technics have yet to be determined. A highly practical and detailed account of the evolution of this research project is given in the second reference.

HARVEY, H. I., and SIMMONS, W. D. Weight Reduction: A Study of the Group Method: Report of Progress. Am. J. M. Sc. 227, 5:521 (May), 1954; (and) SIMMONS, W. D., et al. The Group Approach to Weight Reduction (3 papers). J. Am. Dietet A. 30, 5:437 (May), 1954.

In Your Setting Is This Realistic?—How Glancyville got its swimming pool is a story of practical city politics. Whether it is true to life generally will best be judged by those who, themselves, have put over costly community projects in their own bailiwicks, in the face of normal, human inertia and obstruction.

HUNTER, F. Power Is Where You Find It. Adult Leadership 3, 1:5 (May), 1954.

From Top Downward—Like all kitchens in which public meals are prepared, a school lunch kitchen can be only as sanitary as the personnel make it. Unceasing oversight by management and continuous training are the answers to hazardous conditions. To be sure inadequate equipment also invites foodborne outbreaks but the human element is the culprit usually.

MALLMANN, W. L. Sanitation in the School Lunch Room. Modern San. 6, 4:20 (Apr.), 1954.

Food for You-Know-What—Since the (Br.) National Health Service went into effect, notifications of scarlet fever, whooping cough, and measles have remained above the preservice level. Fatality rates—except for diphtheria—have continued their uninterrupted decline.

MARTIN, W. J. The Recent Trends of Infectious Diseases of Childhood. Brit. M. J. 4867:909 (Apr. 7), 1954.

Demand Exceeds Supply—Full-time health departments employ 3,728 professionally trained sanitarians, and need at least 1,056 more. Where to get them? From 75 to 100 are reported to be graduated each year by the 15 colleges or universities that seem to take an interest in trying to fill this gap.

MILLER, A. P. Formal Education in Sanitary Science. Pub. Health Rep. 69, 5:441 (May), 1954.

Make-Believe—Is this a new idea, or have you heard about it before? In a speech correction class the children were offered masks to hide behind in their therapeutic, role-playing sessions. They used the masks to such good effect that plans are under way to employ this device in other areas. Some enterprising health educator might experiment with this device for similar activities with grown-up children.

POLLACZEK, P. P., and HOMEFIELD, H. D. The Use of Masks as an Adjunct to Role-Playing. Ment. Hyg. 38, 2:299 (Apr.), 1954.

Science Marches On—Using tissue cultures the virologist can often determine serologic types (of poliomyelitis) in from two to 10 days. He now has a relatively simple and inexpensive in vitro technic to supplement the more commonly employed animal and egg inoculation procedures used in most virus studies.

ROBBINS, F. C., and WELLER, T. H. Application of Tissue Culture Methods to the Study of Viral Infections. Pediatrics 13, 4:283 (Apr.), 1954.

Not to Be Missed—"The time is ripe to extend the concept of prevention to our aging population," said the Surgeon General (PHS) in summarizing

the old-age problem for the Regional Conference on Methods of Establishing and Maintaining Standards in Institutions for Older People. It would almost seem that he might have said "overripe."

SCHEELE, L. A. Better Care for Older People. Pub. Health Rep. 69, 5:455 (May), 1954.

Trichinosis Abroad—Even in England, where farmers are required to cook all "wastes" food fed to pigs, trichinosis still lurks to pounce upon the unwary eater of raw pork. Eating uncooked pork is by no means an unknown vice, for a sixth of the 3,000 housewives interviewed blushingly admitted that they nibbled, now and then, on tidbits of pork while preparing it for cooking. Where the pig came from that caused the explosive outbreak reported upon, the authorities could not determine so there was no way to determine how it might have become trichinous.

SEMPLE, A. B., et al. An Outbreak of Trichinosis in Liverpool in 1953. Brit. M. J. 4869:1002 (May 1), 1954.

Aphorisms, Pertinent or Otherwise—"Men are costly." "They are expensive . . . because of the high costs involved in training them." "The supply of efficient, versatile workers is not inexhaustible." "Anything which impairs the working efficiency of men is expensive, wasteful and undesirable." "Brain power is the most precious part of manpower." "Brain power can be . . . made to last longer." The entire essay from which these aphorisms are culled prompts one to ask why improving the quality of public health manpower through pre-employment physical examinations, and promotion "physicals," and periodic examinations for all above the lowest professional grades should not become a prime goal of public health leadership.

STIEGLITZ, E. J. Management's Stake in Health Construction. Indust. Med. & Surg. 23, 5:201 (May), 1954.

"Protective, But—" — Though gamma globulin does confer temporary, passive immunity to poliomyelitis, its practical usefulness is limited because of unrecognizable sources of infection and consequent vagueness about exposure. Its use in the absence of a severe epidemic is questionable. These seem to be the main conclusions of a broad-gauged review.

WARD, R. The Present Status of Gamma Globulin in the Prevention of Paralytic Poliomyelitis. Am. J. M. Sc. 227, 5:565 (May), 1954.

Too True Words—"In theory, health education should have high priority. In practice it is given tremendous verbal support on state occasions, but there is never . . . an adequate amount of money appropriated for this purpose." This is from a story of a city-covering industrial health service in which health education is effectively put to work.

WILLIAMS, J. K. Birmingham's Industrial Health Council. Nursing Outlook 2, 5:244 (May), 1954.

Measured Progress — A provocative discussion of the nurse's role in the public school ends in this vein: "The school health program has suffered greatly in the past from enthusiastic expansion along untested lines. If those who are responsible for these programs are to gain the respect of professional and lay persons, they must do so on the basis of conclusive evidence."

YANKAUER, A. Public Health Nursing in the Schools. Nursing Outlook 2, 4:197 (Apr.), 1954.

If additional information is desired regarding the articles listed in this Bibliography please communicate directly with the publication in which they appeared; the addresses are furnished for your convenience.

Adult Leadership, Adult Education Association of the United States, 743 N. Wabash Ave., Chicago 11, Ill.

Am. J. M. Sc. (American Journal of Medical Sciences), Lea and Febiger, 600 S. Washington Sq., Philadelphia 6, Pa.

Brit. M. J. (British Medical Journal), British Medical Association House, 19 Tavistock Sq., London, W.C. 1, England.

Indust. Med. & Surg. (Industrial Medicine and Surgery), 605 N. Michigan Ave., Chicago, Ill.

J. Am. Dietet. A. (Journal of the American Dietetic Association), 620 N. Michigan Ave., Chicago, Ill.

Ment. Hyg. (Mental Hygiene), National Association for Mental Health, 372-374 Broadway, Albany, N. Y.

Modern San. (Modern Sanitation), 855 Avenue of the Americas, New York 1, N. Y.

New England J. Med. (New England Journal of Medicine), Massachusetts Medical Society, 8 The Fenway, Boston 15, Mass.

Nursing Outlook, American Journal of Nursing Company, 2 Park Ave., New York 16, N. Y.

Pediatrics, Journal of the American Academy of Pediatrics, 301-327 E. Lawrence Ave., Springfield, Ill.

Pub. Health (Public Health), Society of Medical Officers of Health, Tavistock House, South, Tavistock Sq., London, W.C. 1, England.

Pub. Health Rep. (Public Health Reports), Gov. Ptg. Office, Washington, D. C.

Statist. Bull. Metrop. Life Insur. Co. (Statistical Bulletin Metropolitan Life Insurance Company), One Madison Ave., New York 10, N. Y.

Financing Hospital Care Summarized

The Commission on Financing of Hospital Care has issued a summary report entitled "Recommendations." This report contains "the principles and recommendations to the public as formulated and adopted by the full Commission during six days of meetings in October, November, and December, 1953." These recommendations, numbering 12, deal largely with the need for exploration of means to extend prepayment coverage.

The documentation and further detailing of the commission's report will appear in three separate volumes to be entitled, respectively, "Prepayment and the Community," "Financing Hospital Care for Non-wage and Low Income Groups," and "Factors Affecting the Costs of Hospital Care." The last mentioned was the first to be published and each will be available in 1954.

The Commission on Financing of Hospital Care was sponsored by the American Hospital Association and set up in late 1951 for a two-year period. Funds totaling $556,000 for its study were made available from several sources—the Blue Cross Commission, Health Information Foundation, W. K. Kellogg Foundation, Michigan Medical Service, Milbank Memorial Fund, National Foundation for Infantile Paralysis, and the Rockefeller Foundation.

"Recommendations" is available from the commission, 50 East Oak St., Chicago, Ill.; $1.

Association News

EIGHTY-SECOND ANNUAL MEETING
AMERICAN PUBLIC HEALTH ASSOCIATION
BUFFALO, N. Y., OCTOBER 11–15, 1954

APHA SUPPORT FOR FEDERAL GRANTS

TESTIMONY ON BEHALF OF THE AMERICAN PUBLIC HEALTH ASSOCIATION BEFORE THE HOUSE OF REPRESENTATIVES APPROPRIATIONS SUBCOMMITTEE ON LABOR, HEALTH, EDUCATION, AND WELFARE BY LEONA BAUMGARTNER, M.D.

I speak on behalf of the American Public Health Association which is the professional society of all public health workers. It has about 13,000 members. I also speak from the background of my responsibility as commissioner of health for New York City.

I am concerned with the proposed appropriations for fiscal 1955 to the Public Health Service and the Children's Bureau. I have special interest in the proposed reduction in the funds for federal aid to the states for tuberculosis control.

First, a word of review as to where we are in our campaign against tuberculosis which, at the turn of the century, stood first among the causes of death. It was the "Captain of the Men of Death." In 1900 the rate of deaths from this disease exceeded 200 per 100,000. I am told that the rate for 1952 will approximate 15.5.

You and I were born at a time when it was reasonable to expect that tuberculosis would take its toll from almost every family. It is a great achievement that this menace has been largely lifted from the American scene. There are plenty of places in the world right now, however, where tuberculosis prevails as widely as it did here in 1900. And there are places in the United States where the rate is still very high—I think of the Negro, the Spanish-American, and the Indian, for example. Among these groups tuberculosis rates seven times higher are not uncommon. I think of certain areas in the nation's capital and in New York City where the rates are still desperately high.

It does not surprise me that the large reduction in the death rate from tuberculosis in recent years has made it seem reasonable to those who proposed this budget that the federal share should be cut for 1955. I for one want to see such budgets cut as soon as they can safely be reduced. The public health professions, however, are persuaded that a serious cut now such as this proposed 53 per cent reduction would be like withdrawing half the men and material when the battle for Europe was so well advanced that victory was in sight. That was a time for even greater effort to finish the job. Just so, 1955 will be a year in which it will be strategic to throw more money and more manpower into this successful campaign so that our victory will be in this generation rather than in the next.

Tuberculosis is a prime example of the fact that prevention is much cheaper than cure. In Detroit, for example, a five-year program for the control of tuberculosis cost $200,000 a year, but it saved $1,400,000 a year to Detroit in

sanatoria costs alone, to say nothing about the human misery relieved.

I wish to emphasize that tuberculosis is still a serious menace. In spite of all that a dedicated medical profession can do, in spite of great progress in our public health weapons, tuberculosis still kills many young people—in fact, throughout the United States it is still the greatest killer of young adults—greater than such diseases as poliomyelitis, scarlet fever, pneumonia, etc. —and greater than accidents. Tuberculosis still disrupts families. It is still a real enemy to our social well-being.

Let me give you an example from my own city records: Here is a young growing family with four children. The mother, aged 32, is found through a mass x-ray campaign, supported by Health Department funds, to have a moderately advanced case of tuberculosis of the lungs. Skin tests show that three of the four children have acquired the disease from her through the contacts of family life. The mother faces a real dilemma. She has recently been deserted by the father, though she is again pregnant. The children seem completely dependent on her; yet she knows from her medical advisers that she must go to a hospital for several months, both for her own safety and for the safety of her children. That is a critical decision for her as well as for the people of New York City. If she stays at home the chances are large that her own case will progress to serious proportions. Even more important, she will further seed the disease into the younger generations. Last week the situation came to a head. Her youngest child, the one who had previously not shown signs of the disease, came down with tuberculous meningitis. It is touch and go whether that baby can live. That means there are five persons in that fatherless family with some form of tuberculosis.

Here is a test for the community. Will its resources be able to step in, hospitalize that mother, look after that baby in its extremity, and care for the other children? On the outcome depends the tax cost for us and our children. Will the family infections be stopped now with our excellent new weapons? Or will tuberculosis succeed in producing new cases in a new generation? Obviously, here is a case where a small amount of prevention will save many thousands of dollars in the cost for cure. Nineteen hundred and fifty-four and 1955 is no time to withhold the cost of adequate protection. This is the time to finish the job. We public health workers will be among the first to come to you when that time arrives to suggest that federal assistance can be reduced. But that time is not yet! A modest investment now in case finding can readily cut the present cost of treating tuberculosis which in New York City alone amounts to more than $25,000,000 a year.

There is concrete evidence of the benefit from tax money spent in the past for controlling tuberculosis. There are parts of New York City where a few years ago most of the high school children had acquired an infection with tuberculosis from the large amount of uncontrolled disease in the city. Today, in those same areas the number who have had such contact is reduced to less than 15 per cent. Now is the time when continued pressure will reduce that childhood type infection to the vanishing point. In the meantime it is well not to be blinded by the great reduction in tuberculosis deaths. Until the cases can be reduced to a much smaller total we must keep up the pressure.

Thus, I am saying with serious emphasis that this is the very time when tuberculosis is on the run for us to hit it with all that we have got. Each dollar now buys a continuing advance against this killer. Victory is in sight—but this is no time to withdraw from the battle.

I wonder whether you gentlemen

realize how productive these federal dollars have been when divided to the states and used in state and local campaigns. It can be shown that, since substantial federal funds have become available for this campaign, the amounts provided in state and local tax money and in contributed voluntary funds have risen rapidly. This federal assistance amounts to less than 5 per cent of the total spent against tuberculosis, but its significance is very great. Every dollar kept in the fight from federal sources will be matched by other funds at least 28 times as great.

What I have said about the need for continuing federal funds for the tuberculosis campaign has its counterpart in the continuing need for federal leadership and assistance in the control of the venereal diseases. Here, again, the battle is producing magnificent results. The chance of a medical student ever seeing a case of a baby born with congenital syphilis is small now. It was commonplace when I was in medical school. The new drugs have given us weapons relatively as powerful against these diseases as would be atom bombs. Yet, the job is still unfinished. Our children can be saved the burden of syphilis and gonorrhea if we throw in all our resources now. There is evidence that the sharp reductions in the current year of federal aid to the states for VD control have resulted in rising rates and serious setbacks in our campaign. An investment of federal funds now will save a long drawnout attack in future years.

I have been reviewing the manifold ways in which federal aid to the states is now appropriated. You know as I do what large funds are going into highways, into agriculture, and into relief. Less than 4 per cent of federal aid to the states goes into public health. However, I believe it is true that the current and proposed reductions in federal aid for public health purposes represent the highest cuts in any of these federal aid programs. This disturbs me not so much because my colleagues and I will have smaller sums with which to operate, but because this priceless idea of prevention is so easily set aside. The triumphs of preventive medicine in the long run are of immense importance to our American life. We must not let them be lost in the costly business of cure.

It was 19 years ago that Congress adopted the Social Security Act. One small portion of that original act, made up of Titles V and VI, put modest funds behind the preventive idea. Programs for the health of mothers and children, for promoting sanitation, for training health staffs, for recognizing and preventing the venereal diseases and tuberculosis were aided by federal grants to the states. Looking back we can see that the significance of these programs was all out of proportion to the funds that they have cost. The investment of these preventive dollars which, in the aggregate of federal aid to the states, have never exceeded 4 per cent of the total, have made unnecessary much larger expenditures for social welfare which would have been necessary had the level of preventable disease prevailed through these two decades. In the long run, those dollars were among the most productive ever spent in the United States. Our average age at death has risen more than eight years during this period, partly as a result of the savings in disease and death bought by these dollars. As I credit the health workers with their part of this achievement, I do not minimize the contribution of the practicing physicians, especially the pediatricians. It has been magnificent teamwork.

That is the reason I speak now in respect to these very modest sums presently flowing from federal sources to the states for health purposes. The coming decades will be largely affected by the wisdom and imagination that you here

bring to your responsibility. I urge you to restore the tuberculosis funds to the $6,000,000 in the 1954 budget. I urge you to restore the VD funds to a point which will fairly recognize the importance of this preventive purpose. That cannot be reconciled with a prospective reduction in staff by 68 per cent.

My own professional interest in mothers and babies gives special point to my support for the funds proposed for maternal and child health and for crippled children. These I believe to be exceedingly good investments and really with a dollar value at least twice as large as that now being channeled into these services. Tremendous strides have been made in improving maternity care, thanks to advances by the medical and nursing professions and by the public health programs. Excellent progress has been made in finding and relieving the burden of crippled children, but I need not tell you that the job is far from complete not only in the cities but in the rural areas. The Congress has with great wisdom realized recently the human and the dollar values received out of funds put into vocational rehabilitation. Funds invested in rehabilitation of children in their earliest years where troubles begin are of so much greater importance than later. To cut these funds in the face of large increases in the numbers of children in our population cannot be justified in terms of the human values involved.

I speak in favor of continuing in the 1955 budget those other special grants as proposed by the administration. The amounts for maternal and child health, for mental health, for cancer, and for heart disease represent token sums from the federal government, but tokens which have a large potential of influence down at the grass roots, yes, even on the sidewalks of New York. To maintain these modest sums will help build solid foundations under the health services of the future.

Your children and the children of America depend on your judgment right now. Here is a point where constructive statesmanship must come from this Appropriations Committee.

Fellowship Application Final Date

August 2 is the closing date for accepting Fellowship applications that are to be acted upon officially at the Buffalo Annual Meeting the week of October 11. Any members who are interested in applying for Fellowship this year should submit their applications to the Administrative Office, American Public Health Association, 1790 Broadway, New York 19, N. Y., by that date.

Western Branch, APHA, Meets in Seattle

The 21st Annual Meeting of the Western Branch, American Public Health Association, was held in Seattle, Wash., May 10–13 under the presidency of Curtiss M. Everts, Jr., engineer of the State Board of Health, Portland, Ore. The secretary-treasurer, who was re-elected, was Mrs. L. Amy Darter, State Department of Public Health, Berkeley, Calif. The new president-elect is G. D. Carlyle Thompson, M.D., executive officer, Montana State Board of Health, Helena. More than 700 persons were present, representing 11 western states, British Columbia, Alaska, and Hawaii.

The chairman of the Local Committee on Arrangements was Sanford P. Lehman, M.D., health officer of the Seattle-King County Department of Health. An interesting program of visits and hospitality was arranged.

The John J. Sippy Award of the Western Branch was presented to Alfred Lazarus, Ph.D., of the Department of Public Health and Preventive Medicine, University of Washington Medical School, Seattle, in recognition of his distinguished investigations.

Featured speakers from outside the

area of the Western Branch included Leroy E. Burney, M.D., state health officer, Indianapolis, Ind., and Arnold B. Kurlander, M.D., assistant chief, Division of Chronic Disease and Tuberculosis, Public Health Service, Washington, D. C.

The president-elect of the Western Branch who took office at Seattle is Frank R. Williams, health educator, Arizona State Department of Health, Phoenix. The 22nd Annual Meeting of the Western Branch will be held in Phoenix, April 19–22, 1955.

Federal Antifluoridation Bill

At the hearings in Washington, May 25–27, on H.R. 2341, known as the antifluoridation bill, the American Public Health Association was represented by Francis F. Heyroth, M.D., who is associate professor of toxicology and assistant director of the Kettering Laboratory, College of Medicine, University of Cincinnati.

In opposing this bill, which would prohibit any political jurisdiction from treating any public water supply with any fluoride compound, Dr. Heyroth reviewed the 20 years' experience of the Kettering Laboratory in studying the toxicity of fluorides, his study and report to the Cincinnati Board of Health in 1951 recommending that the fluoride content of the city water be adjusted to that which is optimal for dental health by the addition of a fluoride containing compound. This report was later reprinted by the British Ministry of Health as an appendix to the report of its mission to investigate fluoridation in North America. Dr. Heyroth also cited the bill as a reflection of "the unwillingness of those opposed to fluoridation to abide by the locally arrived-at decisions of the many communities that have adopted this public health measure" and as an attempt to negate local decisions by federal edict.

On the basis of evidence derived from four sources—animal and human experimentation, epidemiological studies of the health residents of communities whose water bears excessive amounts of fluorides, and the results of medical examination of workmen exposed to fluorides—Dr. Heyroth reported that evidence leads "to the conclusion that fluoridation of water to 1.0 ppm has an ample margin of safety."

APHA membership application blank on page XXXIII

82nd ANNUAL MEETING

HOW TO MAKE HOTEL RESERVATIONS FOR THE BUFFALO ANNUAL MEETING

A HOUSING BUREAU will be operated by the Buffalo Convention Bureau for the 82nd Annual Meeting of the APHA in Buffalo, October 11–15. Since all requests for rooms will be handled in chronological order, you are urged to send in your reservation as quickly as possible on the form below.

Hotels and Rates

Hotel	Single	Double	Twin
Buffalo—Washington & Swan Sts.	$4.00– 6.50	$7.00– 9.50	$ 9.00–10.00
Graystone—Johnson Pk. & Delaware	2.50– 6.50	4.50– 9.50	6.50– 9.50
Lafayette—Washington & Clinton	5.25– 9.00	8.00–14.00	10.00–13.00
*Markeen—Main at Utica	3.50– 5.50	5.50– 8.50	8.00– 9.00
Midtown—430 Delaware Ave.	3.25– 5.00	5.50– 7.75	7.75– 8.00
Lenox—North Near Delaware	6.00– 8.00	8.50–12.00	9.00–14.00
*Richford—210 Delaware Ave.	3.00– 4.50	5.00– 8.00	6.00– 8.00
Sheraton—715 Delaware Ave.	5.85– 9.35	9.35–10.00	8.85–12.85
Statler—Delaware Ave. at Niagara Sq.	5.50–10.00	8.00–13.00	10.00–16.00
Stuyvesant—245 Elmwood Ave.	6.00–10.00	9.00–16.00	10.00–18.00
*Touraine—274 Delaware Ave.	5.00– 8.00	7.50– 9.00	8.50– 9.00
Westbrook—675 Delaware Ave.	5.00– 8.00	8.00– 9.00	10.00–12.50
Worth—200 Main St.	2.75– 4.50	4.75– 6.50	7.50
*Genessee—308 Pearl St.	2.50– 4.00	5.00– 6.50	7.00

* In addition to Private Baths these Hotels also have rooms with adjoining baths, or without baths.

Rates for Suites available on request.

HOTEL RESERVATION FORM

MAIL TO: Mrs. Evelyn McCarthy, Housing Bureau
155 Franklin Street, Buffalo, N. Y.

PLEASE MAKE RESERVATIONS NOTED BELOW: (Please Print or Type.)

First Choice ..... Hotel Arrival: ....., at ..... a.m. ..... p.m.

Second Choice ..... Hotel Departure: ....., at ..... a.m. ..... p.m.

Third Choice ..... Hotel

..... Single room @ $..... ..... Twin Bedroom @ $.....

..... Double Bedroom @ $.....

ARE YOU COMING BY CAR? YES..... NO.....

NAMES OF ALL OCCUPANTS: ADDRESSES:

....

....

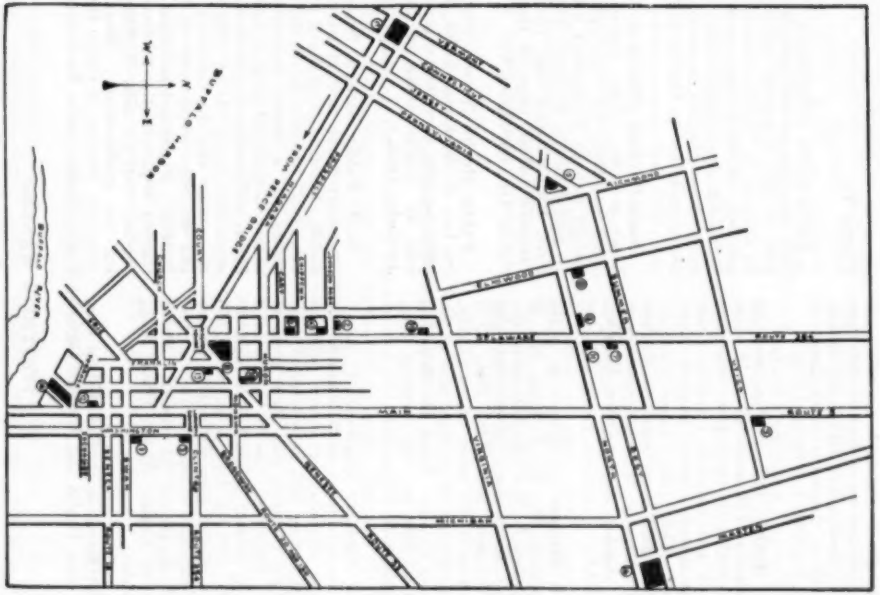
....

MAIL CONFIRMATION TO: Signed: .....

Address: .....

City Zone State

Street Plan of Buffalo Showing Location of Housing Bureau Hotels



Map Key	Hotel
1	Buffalo
2	Graystone
3	Lafayette
5	Markeen
19	Midtown
4	Lenox
6	Richford
7	Sheraton
8	Statler
9	Stuyvesant
10	Touraine
11	Westbrook
12	Worth
18	Genesee
13	Buffalo Convention Bureau
14	Memorial Auditorium
15	Kleinhans Music Hall
16	106th Regiment Armory
17	174th Regiment Armory

EMPLOYMENT SERVICE

The following pages present information for those seeking public health personnel and for those seeking positions in public health.

This is a service of the Association conducted without expense to the employer or employee.

POSITIONS AVAILABLE

Sanitary Engineer with M.P.H. and experience in public water supply desired. Duties to include supervision of watershed sanitation, and relations with communities on system. Salary dependent on qualifications. Personnel Dept., Hackensack Water Company, 4100 Park Ave., Weehawken, N. J.

Public Health Engineer I—for field work on water supply and waste disposal. $350 per month; Civil Service, and retirement system. Personnel Officer, Louisiana State Board of Health, P.O. Box 630, New Orleans 7, La.

District Health Officer—For area of 60,000 population. Full-time staff of 13. Formal public health training, plus two years experience in public health required. Substitutions permitted. Salary depends upon qualifications. Thirty days annual vacation. Transportation paid from Seattle to Anchorage. C. Earl Albrecht, M.D., Commissioner of Health for Alaska, Alaska Office Building, Juneau, Alaska.

Research Director—to develop an active research program for the Saratoga Spa at Saratoga Springs, N. Y. Ph.D. with experience in physiology. Knowledge of biochemistry also useful. Permanent New York State Civil Service position (G-27; salary $6,562–$7,992). Possible appointment to teaching staff of Albany Medical College. Frank W. Reynolds, M.D., Medical Director, The Saratoga Spa., Saratoga Springs, N. Y.

Regional Sanitary Engineer—to supervise sanitation activities in southeastern Alaska and serve as consultant in water pollution control. Graduation from an accredited engineering school required, plus three years of engineering experience, one of which must have been in general public health engineering. Thirty working days vacation. $5,640 increasing to $5,880 after six months service and annual increases thereafter. Duty station, Juneau. Commissioner of Health, Alaska Department of Health, Alaska Office Bldg., Juneau, Alaska.

Medical Officer—as chief of Medical Care Division, Public Health and Welfare Department, USCAR, in Okinawa. $8,360, plus 15 per cent while in Okinawa. Minimum of 18 months. Surgeon General, Department of the Army, Washington 25, D. C. Attention: MEDCM-CP

Bacteriologist—for county health department, modern laboratory. $3,500–$4,250. Director of Personnel, Court House, Arlington County, Va.

Tuberculosis Physicians—for Virginia State Sanatoria wanted immediately; under 50 years of age; citizenship required; eligibility for licensure in Virginia essential; without experience $8,400–$9,168; with experience $9,168–$10,032. Opportunity for advancement. State Health Commissioner, State Department of Health, Richmond 19, Va.

Nurse-Physical Therapist—Crippled children's program. Fully trained and experienced preferred, but will sponsor physical therapy training if necessary. Merit system; 11 paid holidays, 12 days annual and sick leave, hospitalization, and retirement plans. Personnel Officer, Dept. of Health, 115 Colchester Ave., Burlington, Vt.

Public Health Nurses—Several for western half of Oklahoma. $4,205, 13 days vacation; car plus operating expenses furnished. John R. Bourne, Office of Indian Affairs, Anadarko, Okla.

Staff Public Health Nurses—for only city-county health unit in state. Population 47,000. Excellent clinical and research facilities. Staff includes specialists, plus 13 staff nurses and a mental hygiene nursing consultant. Generalized program, including school health and bedside care on demonstration and supervision basis. Active student program in cooperation with the University of Minnesota and the State Department of Health. New building. Degree and minimum public health training required. Car necessary, seven and one-half cents per mile. $3,300, more depending on qualifications. Miss Dorothy E. Anderson, Director of Public Health Nursing, Public Health Center, Rochester, Minn.

POSITIONS WANTED

Bacteriologist—Woman, Ph.D., strong background in public health education, extensive teaching and research, numerous publications, seeks position in a public health or nursing program, **Box L-38,** Employment Service, APHA.

Medical Health Officer—M.P.H., woman, pediatric training, long experience in public health and public school fields, seeks school position in small city requiring direct work with children. **Box PH-47,** Employment Service, APHA.

Pediatrician—M.P.H. Age 48. Large city health department experience. **Box PH-46,** Employment Service, APHA.

Nutritionist—M.S. in the basic medical sciences; research and publications in nutrition and allied sciences; experience in epidemiology. Prefers position in active nutrition research organization. **Box N-6,** Employment Service, APHA.

Dentist—Age 30, graduate 1951. Internship Public Health Service and two years of general practice. Georgia and Florida Boards. Interested in children's dentistry. Desires sponsoring agency for M.P.H. at University of Michigan with subsequent service in return. Edward W. Lusk, D.D.S., 110 Macdill Ave., Tampa 9, Fla.

Sanitary Engineer—B.S., M.P.H., nine years in state health department and two and one-half years in metropolitan area. Experience in diversified sanitary engineering and public health administration. **Box E-27,** Employment Service, APHA.

Public Health Veterinarian — D.V.M., M.P.H., seeks position abroad or at county or state level. Three years of experience in public health, four years clinical experience. 34 years old, single. Location immaterial. Edward Aaron, 61-38 82nd St., Rego Park, N. Y.

Sociologist—Male, 34, married; specializing in community researih and organization and social problem analysis. Wishes to engage in a study of public health acceptance and information. M.A. and credits completed for Ph.D. Taught sociology five years. Either domestic or foreign assignment. S. Fiddle, 5640 Netherland Ave., New York 71, N. Y.

Bacteriologist—College graduate; bacteriology major with ten years of experience in bacteriology, parasitology, and mycology, clinical and public health. Woman. Desires diagnostic position, public health preferred. **Box L-36,** Employment Service, APHA.

Bacteriologist—Ph.D., age 33, experienced in teaching, research and technical and administrative supervision. Active interest in medical microbiology and public health. Prefer Eastern location. **Box L-37,** Employment Service, APHA.

Medical Statistician—Bachelor's degree in mathematics and graduate work in statistics. Four years of research and administrative statistical experience, including service with the New York City Department of Health and the U. S. Public Health Service. Prefer New York City area. Salary $4,500. Aaron Block, 102-35 64th Road, Forest Hills 75, N. Y.

Sanitary Engineer—Graduate, registered, 30 years broad experience in supervision of operation of water and sewage treatment plants as municipal operator, waterworks superintendent and consulting engineer. Statistical background. Age 53. Good health. **Box E-28,** Employment Service, APHA.

Commercial Advertisements

All communications on the following commercial advertisements should be sent to Burneice Larson, Medical Bureau, Palmolive Building, Chicago 11, Ill.

OPPORTUNITIES AVAILABLE

(a) Commissioner, state health department; considerable experience required. (b) Director, district health department outside U.S. (c) Director, school health; city, county health department; $12,000; North. (d) Public health physicians, nurses, health educators and sanitarians; foreign assignments; knowledge of Spanish, French, or Portugese required. (e) Public health nursing administrator; city-county health department; headquarters college town. (f) Public health nurse; A.B. or B.S.; to take charge of two public school districts; California. (g) Director, nursing service, public schools; residential town, East; $4,500-$6,000. (h) Public health nursing coordinator; collegiate school; Southwest. (i) Health educator to serve as executive secretary; community health organization. Burneice Larson, Medical Bureau, Palmolive Building, Chicago.

OPPORTUNITIES WANTED

(a) Public health physician; M.P.H., Hopkins; Diplomate; seven years, director, metropolitan health department. (b) Public health nursing administrator; M.A.; six years, director nursing, state health department. (c) Health educator; M.S., D.P.H.; five years' teaching; seven years, educator, state health department. (d) Sanitary engineer; six years, state health department. Burneice Larson, Medical Bureau, Palmolive Building, Chicago.

News from the Field

WHO News

Seventh World Health Assembly

Officers Elected—The Seventh World Health Assembly, meeting in Geneva May 4–22, elected Dr. Joseph Nagbe Togba, Liberia's director of public health and sanitation, as president. He is a graduate of Meharry Medical College, Nashville, Tenn.

Other officers elected are:

Vice-Presidents—Dr. Youssef Baujr, Lebanon; Sir Claude Corea, Ceylon; Professor Felix Hurtado, Cuba

Chairman, Committee on Program and Budget —Dr. E. J. Aujeleu, France

Chairman, Committee on Administration, Finance, and Legal Matters—Dr. M. Jafar, Pakistan

Bernard Award to Professor Parisot—The Leon Bernard Foundation prize for outstanding achievements in social medicine was presented to Professor Jacques Parisot, dean of the medical faculty of Nancy, and chief delegate of France to the assembly. The prize consists of a medal and 1,000 Swiss francs. The Bernard Foundation was created by international subscription to perpetuate the memory of Professor Bernard of France, who was a member of the League of Nations Health Committee.

Darling Foundation Award—The Darling Foundation prize and medal, periodically awarded to the author of an important work on malaria, was presented to both Professor George MacDonald of Great Britain and G. Robert Coatney, M.D., of the United States. The prize includes a medal and 1,000 Swiss francs. Professor MacDonald, known for his work in malaria epidemiology, is director of the Ross Institute of Tropical Hygiene, London, England, and professor of tropical hygiene, University of London. Dr. Coatney of the National Institutes of Health, Bethesda, Md., is known for his research regarding the therapy and prophylaxis of malaria by antimalaria drugs.

Dr. Candau Addresses the Assembly—In addressing the opening session of the Seventh World Health Assembly, Dr. M. G. Candau expressed, among others, the following ideas:

In order to be effective WHO aid must dovetail into an over-all plan in each country to improve the entire social, economic, and governmental structure.

Priority must be given to projects that will help to raise the country's general health standards and that will be continued and completed by the government aided.

The basic WHO task is to harmonize all forms of international health work to insure that all available resources are utilized in the most economical and effective way possible.

The chief projects for the immediate future are assistance to countries in improving their epidemiological services and their population and health statistics, the development of rural health services, the improvement of environmental sanitation everywhere, and carrying out mass campaigns against endemic diseases.

And with an eye to another meeting going on simultaneously in the Palais des Nations, Dr. Candau said, "I hope that man will have the wisdom to decide, once and for all, that the only enemies worth fighting are ill-health, poverty, and ignorance."

New Members of Executive Board—Six countries: Burma, Chile, France, Japan, Saudi Arabia, and the Union of South Africa were elected to designate new members of the 18-member Executive Board, to succeed the six whose terms expired. The outgoing members represented Belgium, Ceylon, Cuba, Greece, Lebanon, and Liberia. H. van

Zile Hyde, M.D., continues as the United States representative on the board.

New Budget Increased by a Million—The 1955 WHO budget, adopted by the Seventh World Health Assembly totals $9,500,000, representing an increase of $1,000,000 over the 1954 budget, but 3 per cent less than had been recommended by the Committee on Program and Budget. The director-general, Dr. Candau, explained that, because of the severe cut in UN Technical Assistance funds allotted to WHO, the increased budget was to insure the success of field activities, many of which already under way had been transferred from Technical Assistance to the regular budget. Any reduction beyond this modest increase would have "a crippling effect on the orderly development of WHO," according to Dr. Candau.

Milton P. Siegel, assistant director-general for Administration and Finance, pointed out that the contribution of governments to field projects in their countries in local facilities, personnel, and supplies would total more than $27,000,000 in 1955. This amount is almost three times WHO's total budget.

Next Meeting in Mexico City—The Eighth World Health Assembly will be held in Mexico City on invitation of the Mexican government which is prepared to bear all additional costs incurred in holding the assembly away from its Geneva headquarters. The Mexican government will also extend "necessary facilities, immunities, and privileges" to delegates and all others participating in the assembly.

Spanish as a Working Language—The assembly voted to increase the use of Spanish as a working language of WHO. All official records and reports are to be made available in Spanish beginning in 1955. Spanish is to be added to French and English into which resolutions and other decisions of the assembly and Executive Board are to be translated.

The End of Yaws in Sight in Haiti

The Pan American Sanitary Bureau reports what it calls "a landmark in public health annals." Beginning in mid-1950 the Haitian government, with the assistance of PASB technicians and supplies of penicillin and equipment provided by UNICEF, began a campaign to eradicate yaws. Previously, the disease had been estimated to affect about a third of the republic's population of more than three million.

In the campaign Haitian teams covered the whole republic with house-to-house visits, reaching even "the most inaccessible corners of the mountain-ribbed republic."

One injection had been found sufficient to cure the disease or render it noncontagious. All diagnosed cases were given 600,000 units of penicillin, children and those exposed, 300,000 units. By the end of 1953 more than 2,600,000 persons had been treated. Recent surveys in the southern part of the country where the campaign began in 1950 show a contagious yaws incidence of less than 1 per cent; in the northern region where the campaign was carried on in 1952 and 1953, there is an incidence of less than one-third of 1 per cent. The average penicillin cost per case is estimated to be about five cents, the cost of the campaign to the Haitian government about 20 cents per capita, and the total cost including all contributions about 30 cents per case.

"The economic and social value of the work is inestimable; it restores many thousands of people to a useful life, enabling them to make their economic and their social contributions to society, rather than being an economic drain on the body politic," says the PASB report.

New Zealand Dental Health Seminar

WHO has sponsored its first dental health seminar. Held in Wellington, New Zealand, May 4–21, with the cooperation of the New Zealand government, this seminar was attended by 38 participants from 21 countries of the Western Pacific, Southeast Asia, and Eastern Mediterranean regions of WHO. Director of the seminar was Professor C. L. Bailey of Victoria University, Wellington. Among the panel of seven consultants was F. A. Arnold, D.D.S., director, National Institute of Dental Health, Public Health Service.

Bibliography of Occupational Health

A Bibliography of Occupational Health covering the 45 years from 1909 through 1953 has just been published by the Public Health Service. It includes a comprehensive listing of the publications on occupational health that have been issued by the Service. In addition to the traditional uses of a bibliography, "it affords an historical perspective of shifting interests in the field of occupational health and serves as an index to progress." Limited supply for free distribution of single copies to workers and organizations concerned with health problems in industry. Public Health Service Publication No. 300, Gov. Ptg. Office, Washington 25, D. C.; 35 cents.

Seal of Approval for Dishwashers

About a year ago the National Sanitation Foundation Testing Laboratory started its program of issuing seals of approval to manufacturers of soda fountain, luncheonette, and food service equipment where such equipment met the standards of the laboratory. A new category of equipment is now added to those originally certified. Eight manufacturers of commercial dishwashing equipment have now been authorized to use the Testing Laboratory seal of approval on their dishwashing machines. A total of 142 models manufactured by the eight companies were found to meet specifications of Standard No. 3, "Spray-Type Dishwashing Machines," adopted by the National Sanitation Foundation. Further information from the Laboratory, Ann Arbor, Mich.

Public Assistance and Medical Care

The American Public Welfare Association is preparing a series of reports on the role of the state public assistance agency in medical care. The information for this series was collected early in 1953 by means of an inquiry to all state and territorial welfare departments. The three reports that have so far come out of this material are:

1. General Aspects of Medical Assistance, September, 1953
2. Pooled Funds for Medical Care, December, 1953
3. Organization for Administration of Medical Assistance Programs, March, 1954

The author in each case is Pearl Bierman, medical care consultant of the association. American Public Welfare Association, 1313 East 60th St., Chicago 37, Ill. Each report is 20 cents; reduction for quantity orders.

Passano Award to Dr. Smith

A 1947 winner of an American Public Health Association Lasker Award, Homer W. Smith, D.Sc., has won the 1954 Passano Foundation Award of $5,000. The award was presented at a reception and dinner in San Francisco on June 21 during the annual meeting of the American Medical Association. Dr. Smith was cited for his many contributions to the knowledge of the physiology of the kidney, epitomized by his 1951 volume, "The Kidney, Structure and Function in Health and Disease." The citation was read by

Arthur L. Bloomfield, M.D., professor of medicine emeritus, Stanford University, and the principal address made by Walter P. Martin, M.D., the newly installed president of the American Medical Association.

The Passano award, first granted in 1945, is supported by the Williams and Wilkins Company, publishers of medical and science books. Of the 13 recipients (joint awards in three instances) seven had previously received APHA Lasker Awards and one had received the association's Sedgwick Memorial Medal.

Windsor Medical Care Plan Studied

The medical service program offering subscribers complete prepaid physicians' services on an insurance basis for the past 15 years in Windsor, Canada, is being studied by the School of Public Health of the University of Michigan. The study is giving special attention to the attitudes of the medical profession and the public toward the adequacy of services.

The study is being conducted in the school's Bureau of Public Health Economics under the supervision of its director, Professor Nathan Sinai. It is being supported by a grant from the Health Information Foundation which is currently sponsoring seven other projects to obtain facts about family medical costs and health insurance protection. In announcing the grant, the foundation's research director, Odin Anderson, Ph.D., pointed out its special timeliness in view of the current interest in finding methods of increasing both the coverage and benefit provisions of voluntary health insurance.

Polio Prevention Advisory Group

On the recommendation of its Council on Public Health and Education, the New York State Medical Society, at the request of the State Health Department, has named an Advisory Committee on Poliomyelitis Prevention. The committee will work with the department in planning for the use of gamma globulin and poliomyelitis vaccine.

The advisory group consists of Thomas M. Rivers, M.D., director of the Rockefeller Institute for Medical Research; Thurman B. Givan, M.D., director of pediatrics, Cumberland Hospital, Brooklyn; and Tyree C. Wyatt, M.D., chief of pediatrics, Memorial Hospital, Syracuse.

Schools of Public Health Elect

The Association of Schools of Public Health held its annual meeting at the School of Public Health, University of Michigan, Ann Arbor, April 5 and 6, 1954. The University of Montreal, whose curriculum leading to the Diploma in Public Health was accredited by the American Public Health Association during the past year, was admitted to full membership.

Newly elected officers are:

President—Ira V. Hiscock, D.Sc., director, Department of Public Health, Yale University

Vice-President—Charles E. Smith, M.D., dean, School of Public Health, University of California

Secretary-Treasurer—James A. Crabtree, M.D., professor and head, Department of Public Health Practice, University of Pittsburgh

FOA Names Health Advisory Unit

The Foreign Operations Administration recently held the first meeting of its 15-member Health Advisory Committee set up to assist FOA and John J. Hanlon, M.D., its medical director, in carrying out international health projects.

Norman H. Topping, M.D., University of Pennsylvania, Philadelphia, is chairman. Surgeon General Scheele is an ex officio member. Other members of the committee include Thomas Par-

ran, M.D., Gaylord W. Anderson, M.D., Louis Bauer, M.D., Lowell T. Coggeshall, M.D., Wilton L. Halverson, M.D., Hugh R. Leavell, M.D., Douglas Forman, M.D., Benjamin G. Horning, M.D., and Fredrick J. Stare, M.D.; also A. W. Dent, George M. Foster, Ruth B. Freeman, Ed.D., and Harold B. Gotaas, Sc.D.

Lasker Planned Parenthood Awards

The 1954 Albert and Mary Lasker Foundation Awards in Planned Parenthood were awarded by the Planned Parenthood Federation to Elise Ottesen-Jensen, Swedish exponent of family planning and sex education, and Harry Emerson Fosdick, D.D., pastor emeritus of Riverside Church, New York City. The awards committee was under the chairmanship of Wilson G. Smillie, M.D., of Cornell University Medical College. The awards were presented by Haven Emerson, M.D., a member of the Board of Health of New York City.

Mrs. Ottesen-Jensen, founder of Sweden's National League for Sexual Enlightenment, was cited as "the leader in setting Sweden's family planning movement at the forefront in Europe and the world. . . . Overcoming years of opposition, she has been the prime mover in developing a healthy and ethical sex education program for the Swedish people."

Dr. Fosdick was recognized "as a great moral leader of our generation" and for a lifetime of service "in espousing the ethical values of family planning for the advancement of Christian life. In the face of misunderstanding and opposition, he has with zeal and courage defended the rights of free choice and democratic procedure in community endeavors."

Dr. Krehl Wins Wilder Fellowship

The first Russell M. Wilder Fellowship of the National Vitamin Foundation has been awarded to Willard Arthur Krehl, Ph.D. The fellowship will enable him to study for the degree of Doctor of Medicine at Yale University School of Medicine where he is associate professor of nutrition. He will continue to participate in the nutrition and metabolism studies proceeding under the direction of George R. Cowgill, professor of nutrition at that institution. Upon completing his medical training, Dr. Krehl plans to devote himself to the investigation of problems of human nutrition and to teaching this subject at Yale.

The Russell M. Wilder Fellowship was established in 1953 to encourage outstanding persons holding doctorate degrees to further their education in nutrition and related subjects and to continue and expand their research and educational activities in nutrition. The fellowship provides $15,000 over a three-year period.

Reason in the Fluoridation Debate

The Health League of Canada has created a committee to study the merits of fluoridation of water supplies as a public health measure to prevent tooth decay in children. Made up of doctors, dentists, and laymen, the committee will devote itself to insuring reliable presentation of the facts for and against fluoridation. It will try to keep the pertinent issues before the public and challenge inaccurate or irrelevant evidence.

The Health League Committee, it is reported, has agreed to retain an open mind. It takes the position that proponents of fluoridation have produced evidence that it reduces tooth decay. Opponents must now produce clinical and laboratory evidence that fluoridation, as recommended, will produce effects disagreeable enough to be balanced against the benefits of reducing tooth decay.

Poultry Grading Consumer Guide

"Poultry—Buying Guides for Consumers," Home and Garden Bulletin No. 34, of the U. S. Department of Agriculture, explains in simple language and with appropriate illustrations the quality control of poultry conducted by the Department of Agriculture. The difference between inspection and grading and the symbols used for each are explained briefly. Illustrations of current methods of packaging are shown. It is of interest to note that the New York dressed pack is not illustrated. Gov. Ptg. Office, Washington, D. C.

Stream Pollution Control Progress

Progress in the prevention and elimination of stream pollution is depicted graphically in the "6th Annual Report, 1953," of the New England Interstate Water Pollution Control Commission. The magnitude of the task is indicated by the fact that the area includes 65,000 square miles with a population of over 9,000,000 and 2,000 manufacturing plants producing industrial wastes in the area. Progress is noted in the formation of citizens' watershed councils to promote the conservation of natural resources among the communities of two river basins; the construction of $10,000,000 worth of sewage treatment facilities; and a continuation of the industrial waste research programs in several universities. Text of the New England Interstate Water Pollution Control Compact is included. Copies available from Joseph C. Knox, Secretary, 73 Tremont St., Boston 8, Mass.

Propose New York Laboratory Center

A municipal laboratory center for New York City has been proposed by the Committee on Public Health Relations of the New York Academy of Medicine. This center would be made up of four divisions of the city, three already in existence and one proposed, all of which have in common that their main activity is the operation of a laboratory, that they each have some relation to clinical medicine, and that each is urgently in need of adequate space.

The four divisions proposed to constitute the laboratory center are the Public Health Research Institute, created as a nonprofit corporation in 1942 and doing basic research under annual contract to the city; the Health Department's own Bureau of Laboratories presently divided between two different locations; the recently established Air Pollution Control Laboratory; and a proposed Institute of Forensic Medicine to be made up of the Office of the Chief Medical Examiner and an educational institution for the teaching of doctors, lawyers, police, and others concerned with medicolegal problems. The crime detection laboratories of the Police Department would be an integral part of the institute.

Drop in Veterans' Tuberculosis

The Veterans Administration has reported a drop of 40 per cent in tuberculosis deaths among World War II veterans from 1948 to 1952 with a still further drop indicated by provisional 1953 data. This is in contrast to a steady rise from 1942 to 1946 when the controlled chemotherapy program was introduced by the armed forces and the Veterans Administration. The new methods of treatment, the extensive case-finding program begun in 1948, and the decline in tuberculosis deaths among the general population are credited with the 40 per cent drop.

At the same time, VA reports Santa Claus as potent "medicine" for tubercular and other patients in VA hospitals. "Operation Santa Claus" is a toy-making program in the manual arts and

occupational therapy clinics of VA hospitals. Currently, in 26 VA hospitals, more than 3,100 patients turn out 30,000 toys for Christmas distribution to 24,000 needy and institutionalized children. It is reported that the program "will be materially expanded for next Christmas so that more patients may enjoy the therapeutically sound satisfaction which comes from making others happy."

Cooperation in Health Education

The National Conference for Cooperation in Health Education met in New York City in February. The group voted in favor of becoming a member of the International Union for the Health Education of the Public.

Officers elected are:

Chairman—Franklin M. Foote, M.D.
Vice-Chairman—G. Arthur Stetson
Secretary-Treasurer—Dorothy Schober
Executive Committee—Marjorie Craig (one year); Elsa Schneider (two years)

Miss Craig was the representative of the American Public Health Association at the conference.

PERSONALS

KENNETH B. BABCOCK, M.D.,† former professional director, Grace Hospital, Detroit, Mich., has been named director, Joint Commission on Accreditation of Hospitals, Chicago, Ill., to succeed EDWIN L. CROSBY, M.D.,* now executive director, American Hospital Association, Chicago.

BESSIE BALL, R.N., with the Institute of Inter-American Affairs for two years in Nicarauga, is now director of public health nursing, Lincoln-Lancaster County (Neb.) Department of Health.

GERTRUDE F. BAKER,† executive secretary, Jefferson County (N.Y.) Tuberculosis Association for the past 31 years, has retired to live on Cape Cod.

WALTER E. BATCHELDER, M.D.,† former assistant director, American College of Surgeons, is now medical director, Cancer Commission, California Medical Association, San Francisco.

DANIEL J. BERGSMA, M.D.,* New Jersey State health officer, is one of President Eisenhower's six appointees to the Water Pollution Advisory Control Board, Public Health Service.

DWIGHT MONTGOMERY BISSELL, M.D.,* for the past 12 years health officer of San Jose, Calif., is now professor of public health administration, University of North Carolina School of Public Health, Chapel Hill.

MARIE BUCKLEY,† has joined the staff of the Nutrition Section, Michigan Department of Health, Lansing, and not MARIE C. BUCKLEY, R.N.,† educational director, Nursing Section, Chicago Health Department, as erroneously listed in the May Journal.

MILDRED P. BURNS,† former supervising nurse, Westchester County Health Department, has been appointed director of public health nursing, Rensselaer County (N.Y.) Health Department, Troy.

MARTIN CHERKASKY, M.D.,* director, Montefiore Hospital, New York City, has been named chairman of the recently formed Council on Community Service and Education, American Heart Association, and WILLIAM A. BRUMFIELD, JR., M.D.,* chairman, Department of Preventive Medicine and Public Health, New York State University College of Medicine, Syracuse, vice-chairman.

DONALD A. COVALT, M.D.,† former clinical director, fills the newly created post of associate director, Institute of Physical Medicine and Rehabilitation, New York University-Bellevue Medical Center, and has been succeeded by CHARLES LOWMAN, M.D.

J. TUCKERMAN DAY, formerly an editor and co-writer of reports for the Surgeon General of the Army and the Atomic Energy Commission, has joined the Health Information Division of the Massachusetts Department of Public Health, Boston.

SHIRLEY DECKER, formerly with the Greater New York Chapter, National Foundation for Infantile Paralysis, has been appointed medical social worker, New York County Medical Society, to work closely with the society's grievance committee. Only two other county medical societies in the nation are reported using medical social workers—the Westchester County Medical Society at White Plains, N. Y., and the Alameda-Contra Costa Medical Association, Oakland, Calif.

MARGARET DENHAM, R.N.,* for the past two years assigned to the Mutual Security Assistance Program in Indo-China, has been assigned as public health nurse consultant

* Fellow.
† Member.

to the heart disease program, Public Health Service.

HENRY EISENBERG, M.D.,* public Health Service officer who has been assigned as VD control officer, St. Louis (Mo) Division of Health, has resigned from the Service to become public health internist, Division of Cancer and Other Chronic Diseases, Connecticut State Health Department, Hartford.

V. L. ELLICOTT, M.D., DR.P.H.,* who has been county health officer of Montgomery County, Md., at Rockville for 22 years, has resigned effective about August 1 to take charge of the Maryland State Department of Health's program of chronic illness, including the chronic hospitals and the services to chronic patients through county health units.

HERMAN L. FELLTON,* consulting sanitary engineer, has been elected president and chairman of the Board of Directors, Getz Exterminators, Atlanta, Ga.

DEAN H. FISHER, M.D., director of the Bureau of Health, Maine Department of Health and Welfare, Augusta, has been appointed commissioner of the department, succeeding DAVID H. STEVENS resigned to become the first full-time chairman of the State Highway Commission. Dr. Fisher is continuing to act also as director of the Bureau of Health.

CARLOS LUIS GONZALES, M.D.,† formerly chief, Division of Public Health, Pan American Sanitary Bureau, Regional Office for the Americas, WHO, has been named assistant director of PASB.

LOUISA ESKRIDGE HAAS,* public health educator, has transferred from the Branch of Education to the Branch of Health, Bureau of Indian Affairs, U. S. Department of the Interior, Washington, D. C.

STEPHEN S. HENKIN,† former chief, Medical Record Section, U. S. Public Health Service Hospital in Staten Island, N. Y., has resigned to become chief, Medical Record Unit, Division of Administrative Medicine of the Health Insurance Plan of Greater New York.

EARL F. HOERNER, M.D., formerly on the staff of the Department of Physical Medicine, University of Louisville, Louisville, Ky., is director of the new Division of Alcoholic Studies and Rehabilitation, Pennsylvania State Health Department, Harrisburg.

J. F. HOLTZMULLER, M.D., former part-time health commissioner of the Hardin County (Ohio) Health Department, is now full-time health commissioner of Defiance City-County.

JEANNETTE JACKSON, R.N.,† former director of public health nursing, North Carolina Liberal Arts College, Durham, has been assigned to the U. S. Operations Mission to Liberia, in Monrovia, as chief public health nurse.

ELIZABETH HYDE KASEY, former chief health educator of the San Jose (Calif.) Health Department, has been appointed to the staff of the Safety and Occupational Health Bureau, Health and Welfare Division, Metropolitan Life Insurance Company.

FRANKLIN S. KINCHELOE, M.D., former U. S. Army Air Force flight surgeon, has joined the staff of the Richmond, Va., Health Department in tuberculosis control work.

GORDON P. LARSON,† director, Los Angeles (Calif.) County Air Pollution Control District, was elected president of the Air Pollution Control Association at the 47th annual meeting in May.

PAUL B. MALLINCKRODT, D.D.S.,† former public health dentist, Missouri Division of Health, has been named director, Division of Dental Health, South Dakota State Health Department, Pierre.

MARY ANNICE MILLER, former hospital nursing consultant, Hospital Planning Section, Washington State Department of Health, has resigned to become inservice education consultant, Department of Hospital Nursing, National League for Nursing, New York City.

GUSTAVO MOLINA, M.D.,* in charge of the bureau's Professional Educational Branch since July, 1953, and former professor of public health administration in Chile, has been named chief of the Division of Public Health, Pan American Sanitary Bureau, Regional Office, WHO.

MARY MOSSMAN, health educator, Ulster County (N.Y.) Tuberculosis Association, has resigned to take a trip to the Near East during the summer of 1954.

RALPH L. NIELSEN,† former head, Hospital Planning and Development Section, Washington State Health Department, is now research director, Washington Hospital Service (Blue Cross), Seattle. He has been succeeded by RICHARD J. COLE, architectural engineer of the Hospital Planning and Development staff, as acting head.

RICHARD NIPLE, M.D., Belmont County (Ohio) health commissioner, has resigned.

EDWARD W. PALMER, Ed.M., M.P.H.,† former secretary of the Health Council, Omaha United Community Services, is now secretary, Health Council, Greater St. Paul Community Chest and Council, St. Paul, Minn.

JOHN E. PIPES, M.P.H.,† former chief of housing sanitation, Richmond, Va., has been

* Fellow.
† Member.

appointed chief of the Bureau of Sanitation, Department of Public Health, succeeding H. CLIFFORD MITCHELL,† now director of sanitation, St. Louis County, (Mo.) Health Department.

DAVID PRESSMAN, PH.D., who has been in charge of the Immunochemistry Section, Sloan-Kettering Institute in New York City, is now director, Department of Biochemistry, Roswell Park Memorial Institute, New York State Health Department, Buffalo.

JAMES A. REYNIERS, M.S.,† research professor of bacteriology, University of Notre Dame and director, Lobund Institute, has received the 1954 Pasteur Award of the Society of Illinois Bacteriologists "for his pioneering work in germ-free research."

S. C. ROTHMANN, former industrial hygiene engineer, University of California at Los Angeles, is now director, Division of Air Pollution Control, Philadelphia (Pa.) Department of Health.

WILLIAM F. ROWELL, former director of rehabilitation, Southern Worcester County Health Association, has been appointed assistant director of rehabilitation, Massachusetts Tuberculosis and Health League.

DAVID S. RUHE, M.D.,* former director, Medical Audio-Visual Institute, Association of American Medical Colleges, is the new director of audio-visual education and associate professor of public health and preventive medicine, University of Kansas School of Medicine, Lawrence.

MARGARET SANDIN, R.N., former supervisor, physical therapy program, Massachusetts Department of Public Health, has joined the staff of the Quincy Health Department.

JEANNE SCHAVER has returned to Alaska as associate public health nurse in the Matanuska Valley Health Service at Palmer after obtaining her B.S. degree with a major in public health nursing at Loyola University in Chicago.

WILLIAM P. SHEPARD, M.D.,* second vice-president, Metropolitan Life Insurance Company and director, Health and Welfare Division, New York City, has been named chairman of the Council on Industrial Health, American Medical Association, succeeding ANTHONY J. LANZA, M.D.,* director of the Institute of Industrial Medicine, New York University-Bellevue Medical Center.

JEANETTE SIMMONS,† public health educator, Bureau of Indian Affairs, U. S. Department of the Interior, has transferred from the Branch of Education to the Branch of Health, filling one of the four such field positions in the branch. Her headquarters continue to be in Phoenix, Ariz.

RUTH SPURRIER, R.N.,† field advisory nurse, Kentucky State Health Department, has been named director of public health nursing, succeeding MARGARET EAST, now a consultant to the division.

ALBERT SZENT-GYORGYI, M.D., director of the Institute for Muscle Research, Woods Hole, Mass., received the 1954 Albert Lasker Award of the American Heart Association for distinguished achievement in the field of cardiovascular disease, as "an extraordinarily creative explorer of the frontiers of human knowledge."

MILTON V. VELDEE, M.D.,* vice-president and medical director, Hyland Laboratories, Los Angeles, and for 30 years a medical officer, Public Health Service, is now chairman, Biology Department, Stanford Research Institute, Stanford, Calif.

J. GREENWOOD WILSON, M.D.,* medical officer of health and school medical officer, Cardiff, Wales, has been appointed medical officer of health of the Port of London, England. Dr. Wilson is an honorary Fellow of the APHA.

MARJORIE A. C. YOUNG,* consultant in education, National Society for the Prevention of Blindness, has resigned to complete the requirements for a doctorate at the Harvard School of Public Health.

KENT A. ZIMMERMAN, M.D.,† former director of mental health services, California State Department of Public Health, has resigned to become director of child guidance services, Children's Hospital of the East Bay, Oakland.

DEATHS

HOWARD S. ANDERS, M.D., a founder of the National Tuberculosis Association and third president of the Pennsylvania Society for the Prevention of Tuberculosis, in March at the age of 87.

JOSEPH BERG, M.D.,† health officer-in-training, New York City Department of Health (Health Officers Section).

MARY K. BOLTZ, R.N.,† director, Visiting Nurse Association, Lebanon, Pa. (Public Health Nursing).

ATLANTA G. BREES,† medical technician, Allentown, Pa. (Laboratory Section).

* Fellow.
† Member.

JAMES M. CAMERON, M.D., M.P.H.,† director, Corpus Christi-Nueces County (Tex.) Health Unit, on April 25 (Health Officers Section).

BERTHA HOLMAN,* nutrition consultant, Community Service Society, New York, N. Y. (Food and Nutrition Section).

MARTIN A. KEPES, M.D., M.P.H.,† deputy commissioner, Westchester County (N.Y.) Department of Health on May 27 (Health Officers Section).

HARRISON S. MARTLAND, M.D., of Newark, N. J.

J. H. MICHAELS,† sanitarian, Pennsylvania State Health Department, on May 30 (Engineering Section).

ANTHONY M. MURPHY,† who retired in 1947 as La Crosse (Wisconsin) health officer after 40 years of service in that position, on May 13 (Unaffiliated).

CAPTAIN JOHN A. SCHARFFENBERG, M.D.,† ward officer, U. S. Army (Public Health Education Section).

ANNETTE MARY SHEEHY, R.N.,† senior public health nursing consultant, Connecticut State Department of Health, on March 3 (Public Health Nursing Section).

CLYDE C. SLEMONS, M.D.,* retired health officer, Grand Rapids (Mich.) City Department of Health, on May 7, 1953 (Health Officers Section).

CHARLES A. STEURER, M.D.,* deputy health commissioner, Nassau County (N.Y.) Health Department, on June 7 (Health Officers Section).

HARRY STRUSSER, D.D.S.,* director of the Bureau of Dentistry, New York City's Department of Health since 1930 (School Health Section).

ARTHUR V. TURNER,† health officer and registrar of vital statistics, Lyndhurst, N. J. (Health Officers Section).

AUGUSTUS B. WADSWORTH, M.D.,* director of laboratories and research for the New York State Department of Health from 1914 to 1945, on June 2 at the age of 81 (Laboratory Section).

CONFERENCES AND DATES

American Public Health Association. Headquarters: Memorial Auditorium, Buffalo, N. Y. October 11–15.

State and Regional Public Health Meetings:

New England Health Institute. Burlington, Vt. August 25–27.

North Carolina Public Health Association. Sir Walter Hotel, Raleigh, N. C. September 23–25.

Pennsylvania Public Health Association. Pennsylvania State University, State College, Pa. August 18.

Meetings of Other Organizations Coming in July, August, and September:

American Heart Association and Second World Congress of Cardiology. Washington, D. C., September 12–17.

American Home Economics Association. San Francisco, Calif. July 6–9.

American Hospital Association. Chicago, Ill. September 13–16.

American Society of Planning Officials. Benjamin Franklin Hotel, Philadelphia, Pa. September 26–30.

American Veterinary Medical Association. Seattle, Wash. August 23–26.

Family Service Association of America (Biennial Meeting). Los Angeles, Calif. September 7–10.

International Cancer Congress (VI). Sao Paulo, Brazil. July 23–29.

International Conference of Schools of Social Work. Toronto, Canada. July 3–4.

International Congress of Cardiology (Second). Washington, D. C. September 12–15.

International Congress on Mental Health (Fifth) and International Institute on Child Psychiatry. Toronto, Canada. August 14–21.

International Gerontological Conference (Third). London, England. July 19–23.

International Institute on Child Psychiatry. Toronto, Canada. August 13–14.

International Poliomyelitis Conference (Third). Rome, Italy. September 6–10.

International Society for the Welfare of Cripples (Sixth World Congress). The Hague, Netherlands. September 13–17.

International Union Against Tuberculosis. Madrid, Spain. September 26–October 2.

National Council on Family Relations. Mills College, Oakland, Calif. July 8–10.

National Medical Association. Washington, D. C. August 9–13.

National Recreation Association. St. Louis, Mo. September 27–October 1.

World Assembly for the Welfare of the Blind. Paris, France. August 5–14.

World Child Welfare Congress. Zagreb, Yugoslavia. August 30–September 4.

World Federation of Occupational Therapists, First International Congress. Edinburgh, Scotland. August 16–21.

World Assembly of Youth. Singapore. August 16–27.

World Population Conference (United Nations). Rome, Italy. August 31–September 10.

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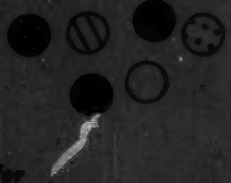

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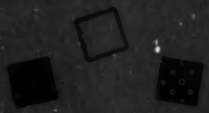

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